



## **Universal Controller 6.3.x**

### **Tasks and Workflows**

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# Tasks and Workflows



## Tasks

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*Creating Tasks*

*Task Types*

*Manually Running and Controlling Tasks*

*Retrieving Output from a Completed Task*

*Copying Tasks*

*Setting Mutually Exclusive Tasks*

*Creating Step Conditions*

*Creating Step Actions*

*Creating Notes*



## Workflows

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*Creating and Maintaining Workflows*

*Monitoring Workflows in Workflow Monitor*



## Monitoring Tasks

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*Monitoring Activity from*

*Monitoring Activity from*

*Monitoring Activity Hist*

*Viewing Task Instances*

*Displaying Task Instanc*



## Task Actions

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*Creating Task Actions*

*Abort Actions*

*Email Notification Actio*

*Set Variable Actions*

*SNMP Notification Actic*

*System Operation Actio*



The information on these pages also is located in the Universal Controller 6.3.x Tasks and Workflows.pdf.

## Creating Tasks

- Tasks
  - Task Types
  - Built-In Variables
- Creating a Task
- All Tasks List
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- <Task Type> Tasks List
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- Task and Task Instance Details Fields
- Updating Tasks
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- Viewing Task Parents
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## Tasks

A Universal Controller task executes a process on a machine, either local or remote. The process might be resident on the machine (agent-based process), or the task itself (such as a File Monitor task) might embed the process.

You can launch tasks within [Workflows](#), by way of [triggers](#), or manually.

## Task Types

Task Type	Usage
Workflow	Create a sequence of connected tasks, which could include other workflows.
Linux/Unix	Run a platform-specific application on a Linux/Unix machine.
Windows	Run a platform-specific application on a Windows machine.
z/OS	Run a platform-specific application on a z/OS machine.
Universal Command	Run a platform-specific application on a machine where Universal Command is running.
SAP	Send commands to an SAP system and gather status information and output back from SAP.
File Transfer	Execute file transfers on remote machines using FTP, SFTP, and UDM protocols.
Manual	Create a pause in the workflow during which the user must take some action.
Timer	Execute a timer command for a specified period of time or until a specific time.
SQL	Execute one or a series of SQL statements against the database specified in the task.
Stored Procedure	Execute a stored procedure against the database specified in the task.
Email	Create and send emails.
Task Monitor	Monitor another task or tasks for one or more specific statuses.
File Monitor	Monitor a specific remote machine for the creation, deletion, change, existence, or non-existence of one or more files at a specific location.
FTP File Monitor	Monitor for a file on a remote machine where an FTP server is running.
System Monitor	Monitor a specific remote machine and check for free disk space.
Variable Monitor	Monitor the value of a Global variable.
Application Control	Execute a start, stop, or query command against an application in the Controller network.

## Built-In Variables

Several [built-in variables](#) are available for use in all task types; other built-in variables exist for specific task types.

## Creating a Task

There are multiple ways to create a task:

1. On the [All Tasks list](#), click the **New** drop-down list and select a task type. A Task Details pop-up displays that lets you enter / select information for a new task.
2. On the Tasks list for a specific [task type](#), click the **New** icon. A Task Details pop-up displays that lets you enter / select information for a new task.
3. In the empty (except for default values) [Task Details](#) that displays below the task list for a specific task type, enter / select information for a new task. If the Task Details displays information for an existing task, click the **New** button to clear the Task Details and enter / select information for a new task.
4. Create a [copy](#) of a task by clicking the **Copy** button in the Task Details and renaming the task.

For detailed information on creating a task for a specific task type, click that task type in the [Task Types](#) table, above.

## All Tasks List

To display a list of all currently defined tasks for all task types, from the [Automation Center](#) navigation pane select **Tasks > All Tasks**. The All Tasks list displays.

Task Name	Type	Task Description	Updated By	Updated
stonebranch-applicationcontroltask-01	Application Control		stonebranch-user-01	2014-06-13 14:23:55 -0400
stonebranch-applicationcontroltask-02	Application Control		stonebranch-user-02	2014-06-13 14:24:02 -0400
stonebranch-applicationcontroltask-03	Application Control		stonebranch-user-03	2014-06-13 14:24:07 -0400
stonebranch-applicationcontroltask-04	Application Control		stonebranch-user-04	2014-06-13 14:24:11 -0400
stonebranch-applicationcontroltask-05	Application Control		stonebranch-user-05	2014-06-13 14:24:16 -0400
stonebranch-emailtask-01	Email		stonebranch-user-02	2014-06-13 14:17:06 -0400
stonebranch-emailtask-02	Email		stonebranch-user-03	2014-06-13 14:17:19 -0400
stonebranch-emailtask-03	Email		stonebranch-user-04	2014-06-13 14:17:24 -0400
stonebranch-emailtask-04	Email		stonebranch-user-05	2014-06-13 14:17:27 -0400
stonebranch-emailtask-05	Email		stonebranch-user-02	2014-06-13 14:17:32 -0400
stonebranch-filemonitor-01	File Monitor		stonebranch-user-03	2014-06-30 11:36:05 -0400
stonebranch-filemonitor-02	File Monitor		stonebranch-user-04	2014-06-13 14:20:04 -0400
stonebranch-filemonitor-03	File Monitor		stonebranch-user-05	2014-06-13 14:20:09 -0400
stonebranch-filemonitor-04	File Monitor		stonebranch-user-02	2014-06-13 14:20:13 -0400
stonebranch-filemonitor-05	File Monitor		stonebranch-user-03	2014-06-13 14:20:18 -0400

## All Tasks List Information

The following table provides a description of the default columns that display on the All Tasks list.

For information about customizing this list, including filtering, sorting, searching, and other list features, see [Record Lists](#).

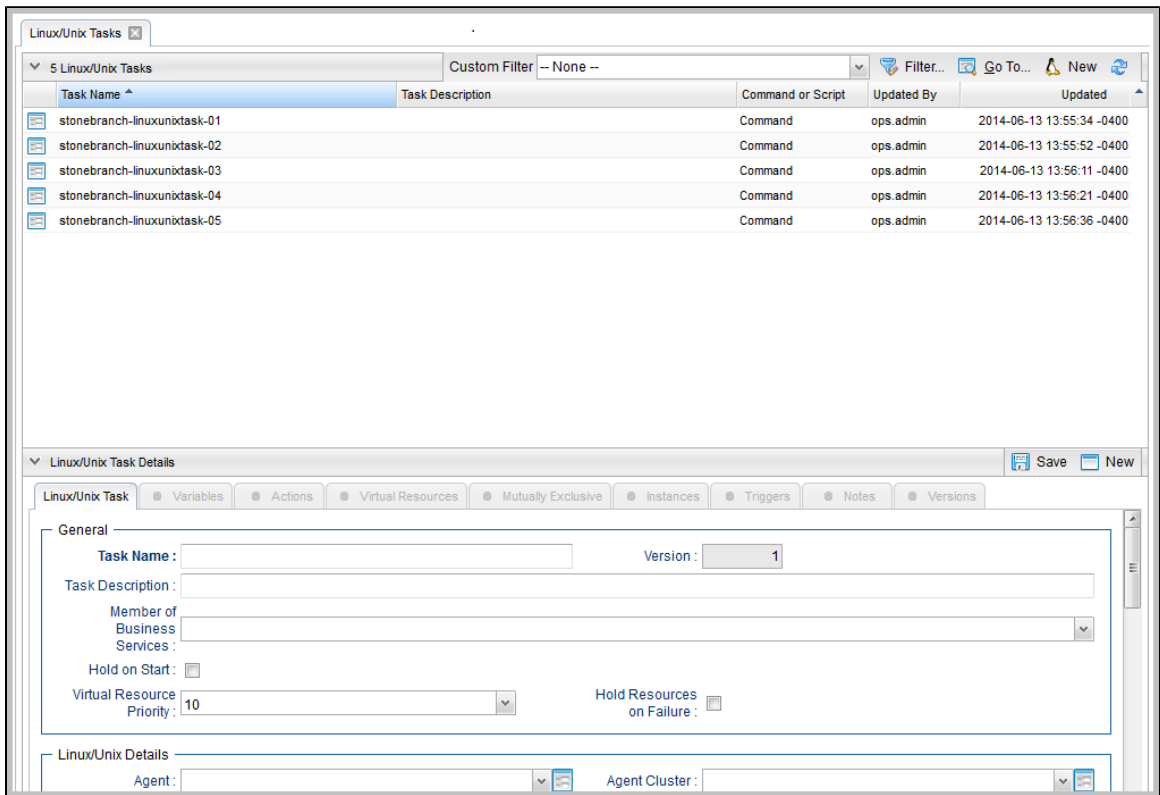
Column	Description
Task Name	User-defined. Name assigned to this task.

Type	Type of task. Options: <ul style="list-style-type: none"> <li>• Workflow</li> <li>• Linux/Unix</li> <li>• Windows</li> <li>• z/OS</li> <li>• Universal Command</li> <li>• SAP</li> <li>• File Transfer</li> <li>• Manual</li> <li>• Timer</li> <li>• SQL</li> <li>• Stored Procedure</li> <li>• Email</li> <li>• Task Monitor</li> <li>• File Monitor</li> <li>• FTP File Monitor</li> <li>• System Monitor</li> <li>• Variable Monitor</li> <li>• Application Control</li> </ul>
Task Description	User-defined. Copied from the Task Description field in the task.
Updated By	System-supplied; User that last updated this record.
Updated	System-supplied; Date and time this record was last updated.

## <Task Type> Tasks List

If you select **Tasks > <Task Type>** from the [Automation Center](#) navigation pane, a tasks list for that selected task type displays.

For example:



## <Task Type> Tasks List Information

The default columns that display on a <Task Type> Tasks list are specific to that type of task.

## Task Details

When you click a task in a Tasks List, Task Details below the list displays all currently defined information for that task.

The screenshot displays the 'Linux/Unix Tasks' interface. At the top, there is a table listing tasks. Below the table, the 'Linux/Unix Task Details' panel is open for the task 'stonebranch-linuxunixtask-01'. The details are organized into sections: 'General' and 'Linux/Unix Details'. The 'General' section includes fields for Task Name, Version, Task Description, Member of Business Services, Hold on Start, Virtual Resource Priority, and Hold Resources on Failure. The 'Linux/Unix Details' section includes fields for Agent, Agent Cluster, Agent Variable, Credentials, Cluster Broadcast, and Run as sudo.

Task Name	Task Description	Command or Script	Updated By	Updated
stonebranch-linuxunixtask-01		Command	stonebranch-user-01	2014-07-07 15:18:10 -0400
stonebranch-linuxunixtask-02		Command	stonebranch-user-02	2014-07-02 13:22:43 -0400
stonebranch-linuxunixtask-03		Command	stonebranch-user-03	2014-06-13 13:56:11 -0400
stonebranch-linuxunixtask-04		Command	stonebranch-user-04	2014-06-13 13:56:21 -0400
stonebranch-linuxunixtask-05		Command	stonebranch-user-05	2014-06-13 13:56:36 -0400

**Linux/Unix Task Details**

Linux/Unix Task: **Variables** **Actions** **Virtual Resources** **Mutually Exclusive** **Instances** **Triggers** **Notes** **Versions**

**General**

Task Name: stonebranch-linuxunixtask-01      Version: 7

Task Description: [Empty]

Member of Business Services: stonebranchbusinessservice 01

Hold on Start:

Virtual Resource Priority: 10      Hold Resources on Failure:

**Linux/Unix Details**

Agent: stonebranch-linuxunixagent-01      Agent Cluster: [Empty]

Agent Variable:       Agent Cluster Variable:

Credentials: [Empty]      Cluster Broadcast: [Empty]

Credentials       Run as sudo:

Use the scroll bar on the right to view more of the Details, or click the Details icon next to the **Task Name** of the task to display a pop-up version of the task Details.

Linux/Unix Task Details: stonebranch-linuxunixtask-01

Update Launch Task View Parents Copy Delete Refresh Close

Linux/Unix Task Variables Actions Virtual Resources Mutually Exclusive Instances Triggers Notes Versions

**General**

Task Name: stonebranch-linuxunixtask-01 Version: 17

Task Description:

Member of Business: stonebranchbusinessservice 01

Services:

Hold on Start:

Virtual Resource Priority: 10 Hold Resources on Failure:

**Linux/Unix Details**

Agent: qa-agentsim1 - simagent1 Agent Cluster:

Agent Variable:  Agent Cluster Variable:

Credentials: stonebranch-credential-01 Cluster Broadcast:

Credentials Variable:  Run as sudo:

Command or Script: Command

Command: dir

Parameters:

Runtime Directory:

Environment Variables:

Name	Value
No items to show.	

Exit Code Processing: Success Exitcode Range

Exit Codes: 0

Automatic Output Retrieval: -- None --

**Retry Options**

Retry Exit Codes:

Maximum Retries: 0 Retry Indefinitely:

Retry Interval (Seconds): 60

**Wait/Delay Options**

Wait To Start: -- None --

Delay On Start: -- None --

Workflow Only: -- System Default --

**Time Options**

Late Start:

Late Finish:

Early Finish:

User Estimated Duration: Day Hour Min Sec

**Critical Path Options**

CP Duration: CP Duration Unit: Minutes

Update Launch Task View Parents Copy Delete Refresh Close

For more information on viewing Details of any record type, including tasks, see [Records](#).

For information on Details for a specific task type, click the appropriate link in [Task Types](#), above.

## Task Instance Details

When you run a task, the Controller create a task instance of that task.



You can view task instance details either by:

- From the Task Details, click the Instances tab and select a task instance of that task.
- Select a task instance from the [Activity Monitor](#).
- Select a task instance from the [Task Instances list](#).

Linux/Unix Task Instance Details: stonebranch-linuxunixtask-01

Linux/Unix Task Instance
Virtual Resources
Exclusive Requests
Output
Notes

**General**

Instance Name:  Reference Id:

Task:  Invoked By:

Task Description:

Member of Business Services:  Execution User:

Virtual Resource Priority:  Hold Resources on Failure:

**Status**

Status:  Exit Code:

Status Description:

Operational Memo:

Wait Until Time:

Queued Time:

Trigger Time:

Start Time:

Launch Time:  End Time:

Duration:  CPU Time:

Process ID:

**Linux/Unix Details**

Agent:  Agent Cluster:

Agent Variable:  Agent Cluster Variable:

Credentials:  Credentials Variable:

Run as sudo:

Command or Script:

Command:

Parameters:

Runtime Directory:

Name	Value
No items to show.	

Exit Code Processing:

Exit Codes:

Automatic Output Retrieval:

Start Line:  Number of Lines:

Scan Text:

**Retry Options**

Retry Exit Codes:

Maximum Retries:  Retry Indefinitely:

Retry Interval (Seconds):  Current Retry Count:

**Wait/Delay Options**

Wait To Start:  Wait Duration In Seconds:

Delay On Start:  Delay Duration In Seconds:

**Critical Path Options**

CP Duration:  CP Duration Unit:

**Statistics**

User Estimated End Time:  Average Estimated End Time:

Shortest Estimated End Time:  Longest Estimated End Time:

## Task and Task Instance Details Fields

The following table identifies all fields that appear in task and/or task instance Details of one or more task type(s).

Unless otherwise indicated, each field appears in the Details for both tasks and task instances.

Each field name is a link to a description of that field.



**Note**

Links within these field descriptions are active only when viewing the field descriptions table for a specific task type.

Field Name	Task only	Task Instance only	Email	File Monitor	File Transfer (FTP/SFTP)	File Transfer (UDM)	FTP File Monitor	Universal Command	Linux Unix	Manual	SAP	SQL	Stored Procecs
Agent				✓	✓		✓		✓				
Agent Cluster				✓	✓		✓		✓				
Agent Cluster Variable				✓	✓		✓		✓				
Agent Variable				✓	✓		✓		✓				
Append Destination Open Option					✓								
Append UDM Options							✓						
Append Source Open Options						✓							
Auto Cleanup												✓	✓
Auto Layout													
Automatic Output Retrieval								✓	✓				
Auto-Restart Option													
Average Estimated End Time		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Average Instance Time			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BCC			✓										
Body			✓										
By Percentage (+/-)				✓									
By Scale (File Monitor)				✓									

By Scale (System Monitor)													
By Size (+/-)				✓									
Calculate Critical Path													
CC			✓										
Cluster Broadcast				✓	✓		✓		✓				
Cluster Variable						✓		✓			✓		
Codepage						✓							
Column Name												✓	✓
Command								✓	✓				
Command (FTP)					✓								
Command Group											✓		
Command or Script								✓	✓				
Compress						✓							
Condition													
CP Duration			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CP Duration (Resolved)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CP Duration Unit			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CPU Time	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Credentials				✓	✓		✓		✓				✓
Credentials Variable				✓	✓		✓		✓				✓
Current Retry Count	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Critical	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Database Connection												✓	✓
Database Connection Variable												✓	✓
Default Calendar													
Delay Duration			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Delay Duration In Seconds			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Delay On Start			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Delete Override JCL													
Destination Credentials						✓							
Destination Credentials Variable						✓							
Destination Filename(s)						✓							
Destination File System						✓							
Destination UDM Agent						✓							
Destination UDM Agent Option						✓							
Duration		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Duration													
Early Finish			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Early Finish Duration			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Early Finish Time			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Early Finish Type			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Email Connection			✓										
Email Template			✓										
Encrypt						✓							
End Time		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Environment Variables									✓	✓			
Execution User		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Exit Code		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Exit Code Processing						✓		✓	✓		✓		
Exit Codes						✓		✓	✓		✓		
Exit Codes (SQL)												✓	
Exit Codes (Stored Procedure)													✓
File Creation Option						✓							

File Owner				✓									
File Transfer Type					✓	✓							
Finished Early		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Finished Late		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
First Time Ran			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
From [ +/- ]hh:mm:													
FTP Credentials					✓		✓						
FTP Credentials Variable					✓		✓						
Highest Instance Time			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hold on Start	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hold Reason	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hold Resources on Failure			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hold Resources on Failure (Workflow)													
Instance Name		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Interact with Desktop													
Invoked by		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
JCL Location													
JCL Override Location													
Job Card (z/OS only)					✓		✓						
Last Instance Duration			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Last Override Deletion													
Last Time Ran			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Late Finish			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Late Finish Duration			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Late Finish Time			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Late Finish Type			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Late Start			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Late Start Duration			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Late Start Time			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Late Start Type			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
List Format Options							✓						
Local Filename					✓								
Longest Estimated End Time		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lowest Instance Time			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Maximum Files				✓									
Maximum Polls							✓						
Maximum Retries					✓	✓		✓	✓		✓	✓	✓
Maximum Rows												✓	✓
Member of Business Services			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitor File(s)				✓									
Monitoring Type													
Monitor Type (File Monitor)				✓									
Monitor Type (FTP File Monitor)							✓						
Monitor Type (System Monitor)													
Mount Points or Drives													
Network Fault Tolerant						✓							
Next Retry Time		✓			✓	✓		✓	✓		✓	✓	✓
New Jobclass													
New Jobname													
New Msgclass													
Number of Instances			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Number of Lines								✓	✓		✓		
Number of Lines (z/OS)													
Number of Override Instances													
Operational Memo		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Operator												✓	✓
Output File (for Exit Code Processing)						✓		✓	✓		✓		
Output File (for Automatic Output Retrieval)								✓	✓		✓		
Output Type						✓		✓	✓		✓		
Override Instance Count for Deletion													
Parameter Position													✓
Parameters									✓				
Poll Interval (Seconds)							✓						
Procedure Library													
Process ID		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Projected End Time		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Queued Time		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Recursive				✓									
Reference Id		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Remote Filename (File Transfer)					✓								
Remote Filename (FTP File Monitor)							✓						
Remote Server (File Transfer)					✓								
Remote Server (FTP File Monitor)							✓						
Reply-To			✓										
Resource Available													





Shortest Estimated End Time		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Show/Hide Skipped Tasks													
Source Credentials						✓							
Source Credentials Variable						✓							
Source Filename(s)						✓							
Source File System						✓							
Source UDM Agent						✓							
Source UDM Agent Option						✓							
SQL Command												✓	
Stable (seconds)				✓									
Stable (Seconds) - FTP							✓						
Started Late		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Start Line								✓	✓		✓		
Start Line (z/OS)													
Start Time		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Status		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Status Description		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Status To Monitor													
Stored Procedure Name													✓
Subcommands (z/OS only)					✓								
Subject			✓										
Suppress Intermediate Failures		✓			✓	✓		✓	✓		✓	✓	✓
Task		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Task Description			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Task Name	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Task Name Condition														
Task Name Contains														
Task Name Ends With														
Task Name Starts With														
Task to Monitor														
Task Type to Monitor														
Time in Seconds														
Timer Type														
Time Scope														
To			✔											
To Scale				✔										
To Size				✔										
To [+/-]hh:mm:														
Transfer Mode					✔		✔							
Transfer Protocol					✔		✔							
Transfer Type (FTP/SFTP)					✔									
Transfer Type (UDM)							✔							
Trigger on Existence				✔										
Trim Trailing Spaces							✔							
Universal Command Agent										✔				
Universal Command Agent Option										✔				
Universal Command Credentials										✔				
Universal Command Credentials Variable										✔				
Universal Command Options										✔				

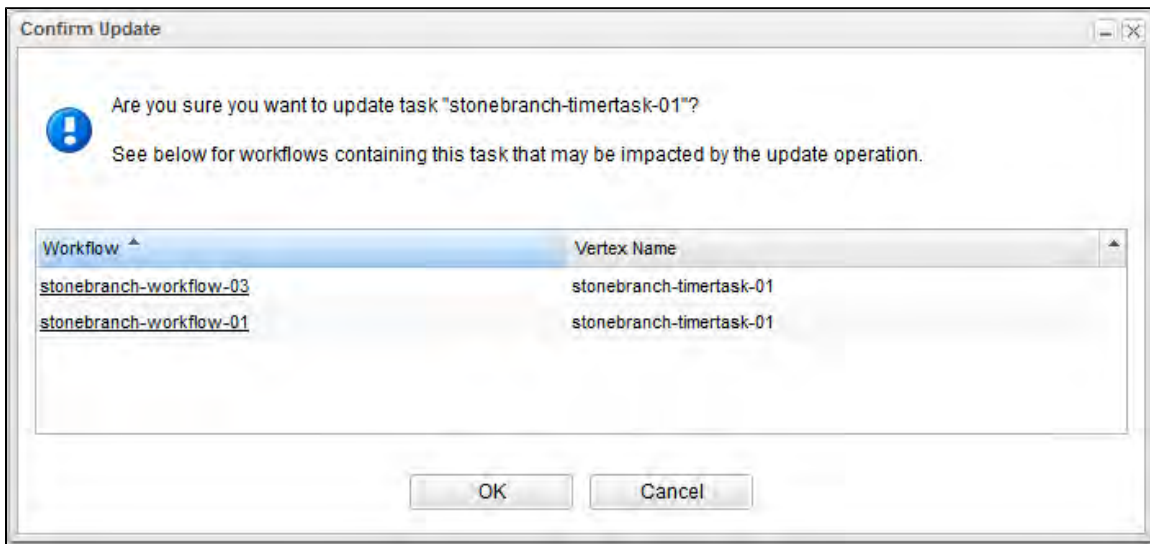
Use JCL Override Library													
User Estimated Duration	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
User Estimated End Time		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Utility Agent						✓		✓			✓		
Utility Agent Cluster						✓		✓			✓		
Utility Agent Variable						✓		✓			✓		
Utility Credentials						✓		✓			✓		
Utility Credentials Variable						✓		✓			✓		
Value												✓	✓
Value													
Value Condition													
Value Monitor Type													
Variable To Monitor Type													
Version	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Virtual Resource Priority			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wait Duration			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wait Duration In Seconds			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wait Time			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wait To Start			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wait Until Satisfied							✓						
Wait Until Time													
Wait Until Time (status)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Workflow Name Condition													
Workflow Name Contains													

Workflow Name Ends With													
Workflow Name Equals													
Workflow Name Starts With													
Workflow Only	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

## Updating Tasks

To save information that you have changed in a task, you must click the **Update** button that displays above and below the [Task Details](#).

If the task is contained in one or more Workflows, and the [Confirm Update For Tasks In Workflows](#) Universal Controller system property value is set to **true**, the Confirm Update dialog displays when you click **Update**.



The Confirm Update dialog allows you to see which Workflows could be impacted by the update.

It displays, by default, two columns of information:

<b>Workflow</b>	Name of a Workflow that contain the task.
<b>Vertex Name</b>	Name of the task (or task alias) within the Workflow.

You also can display the following additional column by right-clicking either column header and selecting it from **Columns** on the [Action menu](#):

<b>Vertex Id</b>	ID of the <a href="#">task vertex</a> within the Workflow.
------------------	--

Click the **OK** button to update the task, or click the **Cancel** button.



**Note**

You also can see this parent Workflows information for a task without updating a task (see [Viewing Task Parents](#)).

For information on updating multiple tasks, see [Updating Multiple Records](#).

## Deleting Tasks

To delete a task, either:

- Right-click the task in a tasks list and, on the displayed [Action menu](#), click **Delete**.
- Open the task and click the **Delete** button.



**Note**

You cannot delete a task if it is either:

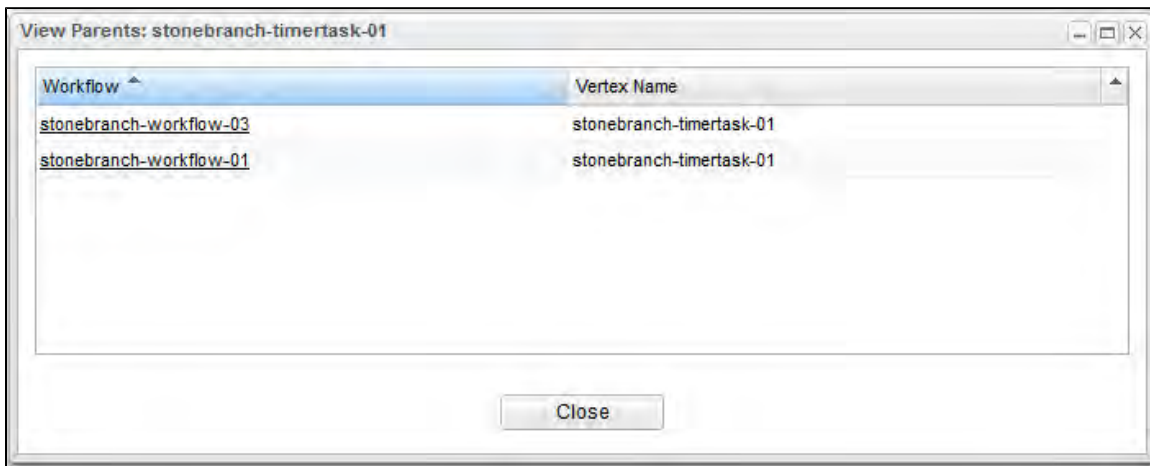
- Specified in an enabled Trigger.
- The only task specified in a disabled Trigger.

## Viewing Task Parents

You can view any parent Workflow information for a task either by:

- Clicking the **View Parents** button in the [Task Details](#)
- Displaying the [Action menu](#) from the Task Details or Tasks list and then selecting [View Parents](#).

In either case, a View Parents dialog displays:



The View Parents dialog displays, by default, two columns of information:

<b>Workflow</b>	Name of a Workflow that contain the task.
<b>Vertex Name</b>	Name of the task (or task alias) within the Workflow.

You also can display the following additional column by right-clicking either column header and selecting it from **Columns** on the [Action menu](#):

<b>Vertex Id</b>	ID of the <a href="#">task vertex</a> within the Workflow.
------------------	--



**Note**

It also is possible to see this parent Workflows information for a task when you are [updating a task](#).

## Additional Information

The following pages provide additional information related to the creation of tasks:

- [Creating Task Actions](#)
- [Copying Tasks](#)
- [Setting Mutually Exclusive Tasks](#)
- [Creating Notes](#)

## Linux Unix Task

- [Before You Begin](#)
- [Built-In Variables](#)
- [Creating a Linux/Unix Task](#)
  - [Linux/Unix Task Details](#)
  - [Linux/Unix Task Details Field Descriptions](#)
- [Viewing a Linux/Unix Task Instance](#)
  - [Linux/Unix Task Instance Details](#)
  - [Linux/Unix Task Instance Details Field Descriptions](#)
- [Running a Linux/Unix Task](#)
- [Monitoring Task Execution](#)

### Before You Begin

The Linux/Unix task allows you to run a platform-specific application on a Linux/Unix machine. To run a Linux/Unix task, you must first complete the following tasks:

- [Install Universal Agent for Linux/Unix](#) on a Linux/Unix machine.
- Launch the Agent. When the Agent connects with the Controller, it automatically creates an [Agent resource definition](#) in the database.
- Optionally, customize the Agent heartbeat and log levels, as described in [Linux/Unix Agent Details Field Descriptions](#).

### Built-In Variables

The following [built-in variables](#) can be used in a Linux/Unix task to pass data where appropriate:

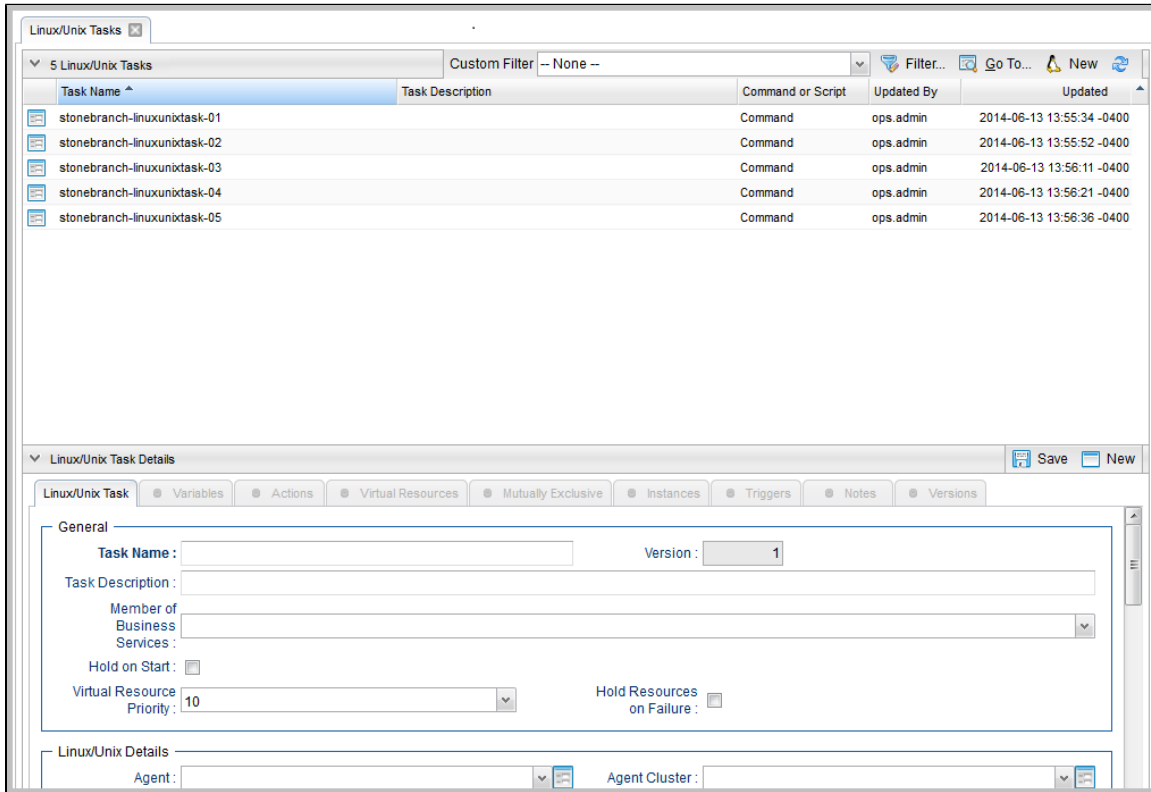
- [Agent-Based Task Instance variables](#)
- [Task Instance variables](#)

### Creating a Linux/Unix Task



**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > Linux/Unix Tasks**. The Linux/Unix Tasks list displays a list of all currently defined Linux/Unix tasks.

Below the list, Linux/Unix Task Details for a new Linux/Unix task displays.



**Step 2** Enter / select Details for a new Linux/Unix task, using the field descriptions below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily **hide the list** above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To **open** an existing record on the list, either:

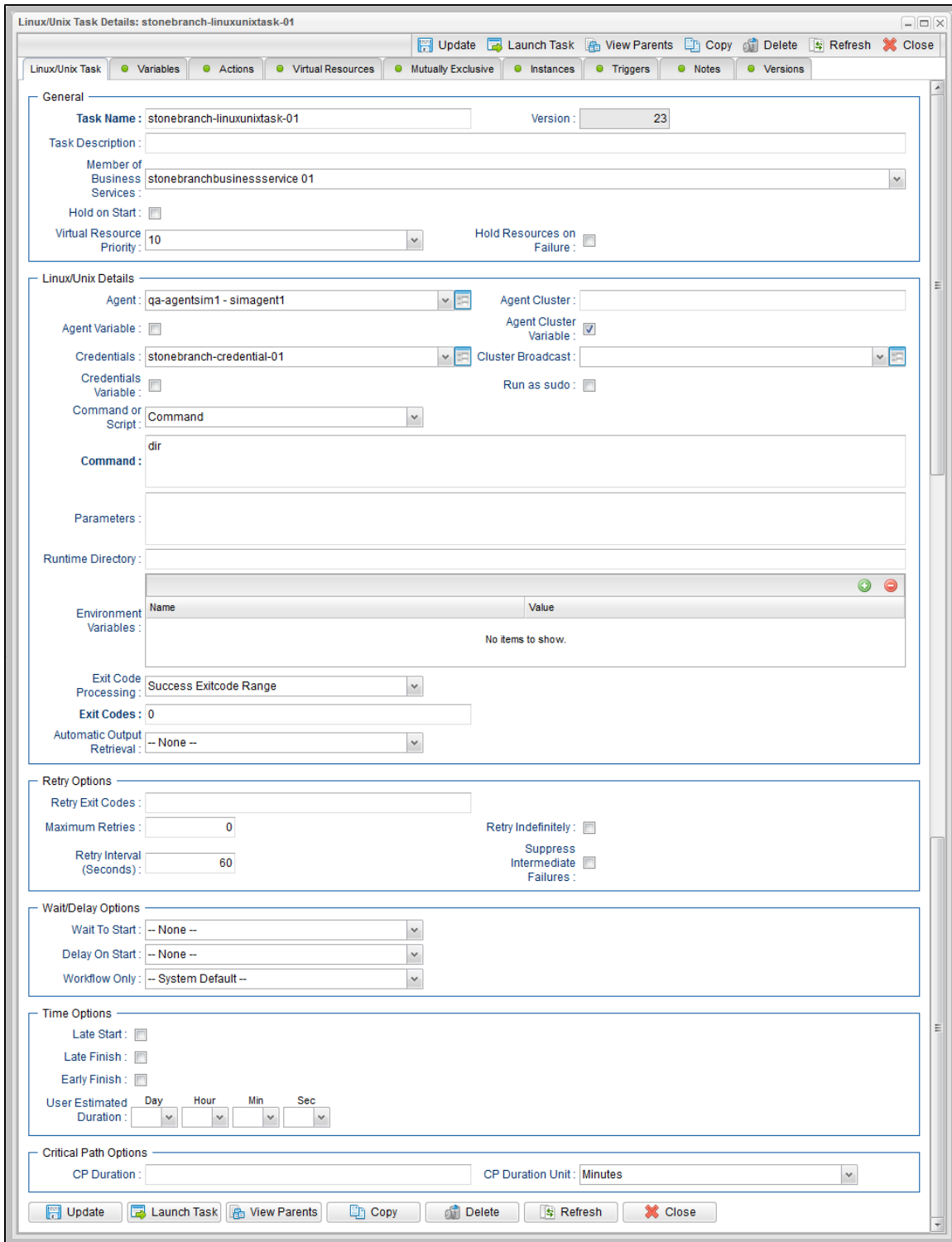
- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the **Details icon** next to a record name in the list, or right-click a record in the list and then click **Open** in the **Action menu** that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the **Action menu** that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## Linux/Unix Task Details

The following Linux/Unix Task Details is for an existing Linux/Unix task.

Depending on the values that you enter / select for these fields, and whether or not the Linux/Unix task has ever been launched, more (or less)


fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Linux/Unix Task Details.





### Linux/Unix Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Linux/Unix Task Details.

Field Name	Description
General	This section contains general information about the task.

Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions</a> tab to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Linux/Unix Details</b>	This section contains assorted detailed information about the task.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .
Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.
Agent Variable	Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in <a href="#">Variables and Functions</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>

Agent Cluster Variable	<p>Indication of whether the <a href="#">Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
Credentials	<p><a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.</p>
Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Cluster Broadcast	<p>Group of Agents, all of which will run this task (compare with Agent Cluster). You can specify a Cluster Broadcast in place of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.</p>
Run as sudo	<p>If <a href="#">Command or Script</a> = Command; Run the command as sudo (superuser do).</p>
Command or Script	<p>Specifies whether a single command or a script is being executed.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Command (default)</li> <li>• Script</li> </ul>
Script	<p>If <a href="#">Command or Script</a> = Script; Required. Name of the <a href="#">script</a> in the Controller database that will be executed by this task.</p>
Command	<p>If <a href="#">Command or Script</a> = Command; Required. Command being executed on the remote machine. <a href="#">Variables</a> supported.</p>
Parameters	<p>Any arguments needed by the program to execute properly. <a href="#">Variables</a> supported.</p>
Runtime Directory	<p>Directory from which the application should be executed. <a href="#">Variables</a> supported.</p>

<p>Environment Variables</p>	<p>Allows you to enter environment variables needed by the program to run.</p> <p>To add a variable, click the + icon and enter a <b>Name</b> and <b>Value</b>. To delete a variable, select in the list of variables and click the - icon.</p> <p>You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath.</p>
<p>Exit Code Processing</p>	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Output Contains Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Failure Output Contains Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul>
<p>Output Type</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>
<p>Scan Output For</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.</p>
<p>Output File (for <a href="#">Exit Code Processing</a>)</p>	<p>Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.</p>
<p>Exit Codes</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>
<p>Automatic Output Retrieval</p>	<p>Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None Do not attach any output to the task instance record.</li> <li>• Standard Output Attach all standard output.</li> <li>• Standard Error Attach standard error output.</li> <li>• File Attach the file specified in the <a href="#">Output File</a> field.</li> <li>• Standard Output/Error Attach all standard output and standard error output.</li> </ul>


Start Line	<p>If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated.</p> <ul style="list-style-type: none"> <li>• If a <b>Start Line</b> value is not specified, the default is 1.</li> <li>• If the <b>Start Line</b> value is -1, data will be retrieved starting at the end of the file.</li> </ul>
Number of Lines	<p>If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <a href="#">Retrieve Output Default Maximum Lines</a> Universal Controller system property.</p>
Scan Text	<p>If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the <b>Number of Lines</b> above and below the first line matched.</p> <p>if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.</p>
Output File (for Automatic Output Retrieval)	<p>Required if <a href="#">Automatic Output Retrieval</a> = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.</p>
<b>Retry Options</b>	<p>This section contains specifications for retrying the task.</p>
Retry Exit Codes	<p>Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the <a href="#">Exit Codes</a> field. <a href="#">Maximum Retries</a> must be greater than 0.</p> <p>If this field is empty, any exit code potentially will cause a retry.</p>
Maximum Retries	<p>User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.</p>
Retry Indefinitely	<p>User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.</p>
Retry Interval (Seconds)	<p>User-defined; number of seconds between each retry.</p>
Suppress Intermediate Failures	<p>User-defined; If the task instance is in the <a href="#">Failed status</a>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
<b>Wait / Delay Options</b>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>

<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>

Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
Workflow Only	<p>Specification for whether or not to apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>- - System Default - - Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications as defined by the <a href="#">System Default Wait/Delay Workflow Only</a> system property. (Default is <b>yes</b>.)</li> <li>Yes Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</li> <li>No Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications whether or not the task is in a Workflow.</li> </ul>
<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>Time - Flag the task if it starts after the specified time.</li> <li>Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.



Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for task instances of the task.
First Time Ran	System-supplied; date and time this task first ran.
Last Time Ran	System-supplied; date and time the task last ran.

Last Instance Duration	System-supplied; amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; shortest amount of time this task has taken to run.
Average Instance Time	System-supplied; average amount of time this task takes to run.
Highest Instance Time	System-supplied; longest amount of time this task has taken to run.
Number of Instances	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<p><b>Actions</b></p>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" data-bbox="370 478 1482 835"> <tr> <td data-bbox="370 478 511 548"><b>Abort Action</b></td> <td data-bbox="511 478 1482 548">Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td data-bbox="370 548 511 617"><b>Email Notification</b></td> <td data-bbox="511 548 1482 617">Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td data-bbox="370 617 511 686"><b>Set Variable</b></td> <td data-bbox="511 617 1482 686">Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td data-bbox="370 686 511 756"><b>SNMP Notification</b></td> <td data-bbox="511 686 1482 756">Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td data-bbox="370 756 511 825"><b>System Operation</b></td> <td data-bbox="511 756 1482 825">Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .										
<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .										
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<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<p><b>Virtual Resources</b></p>	<p>Lists all <a href="#">Virtual Resources</a> to which this task is assigned.</p>										
<p><b>Mutually Exclusive</b></p>	<p>Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.</p>										
<p><b>Instances</b></p>	<p>Lists all instances of the task.</p>										
<p><b>Triggers</b></p>	<p>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: &lt;current task name&gt;#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a>.</p>										
<p><b>Notes</b></p>	<p>Lists all <a href="#">notes</a> associated with this record.</p>										
<p><b>Versions</b></p>	<p>Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a>.</p>										

## Viewing a Linux/Unix Task Instance

When a Linux/Unix task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [Linux/Unix Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

### Linux/Unix Task Instance Details

The following Linux/Unix Task Instance Details contains information on the execution of the task shown in the [Linux/Unix Task Details](#).

Linux/Unix Task Instance Details: stonebranch-linuxunixtask-01

Linux/Unix Task Instance
Virtual Resources
Exclusive Requests
Output
Notes

**General**

Instance Name:  Reference Id:

Task:  Invoked By:

Task Description:

Member of Business Services:  Execution User:

Virtual Resource Priority:  Hold Resources on Failure:

**Status**

Status:  Exit Code:

Status Description:

Operational Memo:

Wait Until Time:

Queued Time:

Trigger Time:  Start Time:

Launch Time:  End Time:

Duration:  CPU Time:

Process ID:

**Linux/Unix Details**

Agent:  Agent Cluster:

Agent Variable:  Agent Cluster Variable:

Credentials:  Credentials Variable:

Command or Script:  Run as sudo:

Command:

Parameters:

Runtime Directory:

Environment Variables: 

Name	Value
No items to show.	

Exit Code Processing:

Exit Codes:

Automatic Output Retrieval:

Start Line:  Number of Lines:

Scan Text:

**Retry Options**

Retry Exit Codes:

Maximum Retries:  Retry Indefinitely:

Retry Interval (Seconds):  Suppress Intermediate Failures:

Current Retry Count:

**Wait/Delay Options**

Wait To Start:  Wait Duration In Seconds:

Delay On Start:  Delay Duration In Seconds:

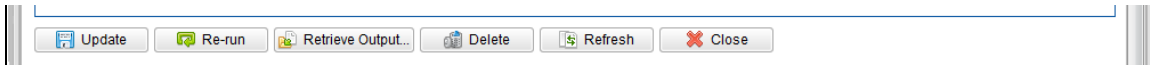
**Critical Path Options**

CP Duration:  CP Duration Unit:

**Statistics**

User Estimated End Time:  Average Estimated End Time:


Shortest Estimated End Time:  Longest Estimated End Time:





## Linux/Unix Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Linux/Unix Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	System-supplied; how the task instance was launched.  Options: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.

Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
CPU Time	System-supplied; amount of CPU time the task took to run.
Process ID	System-supplied; ID of the process that was launched.
<b>Linux/Unix Details</b>	This section contains assorted detailed information about the task instance.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .
Agent Variable	<p>Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.

Agent Cluster Variable	<p>Indication of whether the <a href="#">Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
Credentials	<p><a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.</p>
Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Run as sudo	<p>If <a href="#">Command or Script</a> = Command; Run the command as sudo (superuser do).</p>
Command or Script	<p>Specifies whether a single command or a script is being executed.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Command (default)</li> <li>• Script</li> </ul>
Script	<p>If <a href="#">Command or Script</a> = Script; Required. Name of the <a href="#">script</a> in the Controller database that will be executed by this task.</p>
Command	<p>If <a href="#">Command or Script</a> = Command; Required. Command being executed on the remote machine. <a href="#">Variables</a> supported.</p>
Parameters	<p>Any arguments needed by the program to execute properly. <a href="#">Variables</a> supported.</p>
Runtime Directory	<p>Directory from which the application should be executed. <a href="#">Variables</a> supported.</p>

<p>Environment Variables</p>	<p>Allows you to enter environment variables needed by the program to run.</p> <p>To add a variable, click the + icon and enter a <b>Name</b> and <b>Value</b>. To delete a variable, select in the list of variables and click the - icon.</p> <p>You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath.</p>
<p>Exit Code Processing</p>	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Output Contains Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Failure Output Contains Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul>
<p>Output Type</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>
<p>Exit Codes</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>
<p>Scan Output For</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.</p>
<p>Output File (for <a href="#">Exit Code Processing</a>)</p>	<p>Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.</p>
<p>Automatic Output Retrieval</p>	<p>Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None Do not attach any output to the task instance record.</li> <li>• Standard Output Attach all standard output.</li> <li>• Standard Error Attach standard error output.</li> <li>• File Attach the file specified in the <a href="#">Output File</a> field.</li> <li>• Standard Output/Error Attach all standard output and standard error output.</li> </ul>



Start Line	<p>If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated.</p> <ul style="list-style-type: none"> <li>• If a <b>Start Line</b> value is not specified, the default is 1.</li> <li>• If the <b>Start Line</b> value is -1, data will be retrieved starting at the end of the file.</li> </ul>
Number of Lines	<p>If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <a href="#">Retrieve Output Default Maximum Lines</a> Universal Controller system property.</p>
Scan Text	<p>If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the <b>Number of Lines</b> above and below the first line matched.</p> <p>if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.</p>
Output File (for Automatic Output Retrieval)	<p>Required if <a href="#">Automatic Output Retrieval</a> = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.</p>
<b>Retry Options</b>	<p>This section contains specifications for retrying the task.</p>
Retry Exit Codes	<p>Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the <a href="#">Exit Codes</a> field. <a href="#">Maximum Retries</a> must be greater than 0.</p> <p>If this field is empty, any exit code potentially will cause a retry.</p>
Maximum Retries	<p>User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.</p>
Retry Indefinitely	<p>User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.</p>
Retry Interval (Seconds)	<p>User-defined; number of seconds between each retry.</p>
Current Retry Count	<p>System-supplied; current number of times that the Controller has retried the task after it first went to failure status.</p>
Suppress Intermediate Failures	<p>User-defined; If the task instance is in the <a href="#">Failed status</a>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
Next Retry Time	<p>System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.</p>

<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.
Wait Day Constraint	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
Wait Duration	If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.

Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.

Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.

<b>Average Estimated End Time</b>	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Longest Estimated End Time</b>	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Projected End Time</b>	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Output</b>	<p>Displays output generated from the process, if any, based on specifications provided by the user in the <a href="#">Automatic Output Retrieval</a> fields in the task Details.</p> <p>If automatic output retrieval was not available or was not selected, output can be obtained by clicking the <a href="#">Retrieve Output</a> button.</p>
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Running a Linux/Unix Task

You can run a Linux/Unix task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the Linux/Unix tasks list or Linux/Unix Task Details [Action menu](#).
- As part of a [Workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## Windows Task

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  - [Windows Task Instance Details](#)
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### Before You Begin

The Windows task allows you to run a platform-specific application on a Windows machine. To run a Windows task, you must first complete the following tasks:

- [Install Universal Agent for Windows](#) on a Windows machine.
- Launch the Agent. When the Agent connects with the Controller, it automatically creates an [Agent resource definition](#) in the database.
- Optionally, customize the Agent heartbeat and log levels, as described in [Windows Agent Details Field Descriptions](#).

### Built-In Variables

The following [built-in variables](#) can be used in a Windows task to pass data where appropriate:

- [Agent-Based Task Instance variables](#)
- [Task Instance variables](#)

### Creating a Windows Task

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > Windows Tasks**. The Windows Tasks list displays a list of all currently defined Windows tasks.

Below the list, Windows Task Details for a new Windows task displays.

The screenshot shows the 'Windows Tasks' interface. At the top, there is a list of 5 Windows Tasks. Below the list, the 'Windows Task Details' form is displayed, showing fields for Task Name, Task Description, Member of Business Services, Hold on Start, Virtual Resource Priority, Agent, Agent Cluster, and Agent Variable.

Task Name	Task Description	Command or Script	Updated By	Updated
stonebranch-windowstask-01		Command	ops.admin	2014-06-13 16:26:32 -0400
stonebranch-windowstask-02		Command	ops.admin	2014-06-13 13:58:29 -0400
stonebranch-windowstask-03		Command	ops.admin	2014-06-13 13:58:38 -0400
stonebranch-windowstask-04		Command	ops.admin	2014-06-13 13:58:49 -0400
stonebranch-windowstask-05		Command	ops.admin	2014-06-13 13:59:00 -0400

The 'Windows Task Details' form includes the following fields:

- Task Name:** (Required field)
- Task Description:** (Text area)
- Member of Business Services:** (Dropdown menu)
- Hold on Start:** (Checkbox)
- Virtual Resource Priority:** (Dropdown menu, default 10)
- Hold Resources on Failure:** (Checkbox)
- Agent:** (Dropdown menu)
- Agent Cluster:** (Dropdown menu)
- Agent Variable:** (Checkbox)

**Step 2** Enter/select Details for a new Windows task, using the [field descriptions](#) below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## Windows Task Details



The following Windows Task Details is for an existing Windows task.

Depending on the values that you enter / select for these fields, and whether or not the Windows task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Windows Task Details.


The screenshot shows the 'Windows Task Details' configuration window for a task named 'stonebranch-windowstask-01'. The window is organized into several sections:




- General:** Contains fields for Task Name, Version (13), Task Description, Member of Business Services, Hold on Start, Virtual Resource Priority (10), and Hold Resources on Failure.
- Windows Details:** Includes Agent (qa-win7-x64 - WIN7X64), Agent Cluster, Agent Variable, Credentials, Cluster Broadcast, Command or Script (Command), Command (dir), Parameters, Runtime Directory, Interact with Desktop, Environment Variables (empty table), Exit Code Processing (Success Exitcode Range), Exit Codes (0), and Automatic Output Retrieval (None).
- Retry Options:** Features Retry Exit Codes, Maximum Retries (0), Retry Interval (60 seconds), and checkboxes for Retry Indefinitely and Suppress Intermediate Failures.
- Wait/Delay Options:** Includes Wait To Start, Delay On Start, and Workflow Only (System Default).
- Time Options:** Contains checkboxes for Late Start, Late Finish, and Early Finish, along with a User Estimated Duration field with Day, Hour, Min, and Sec sub-fields.
- Critical Path Options:** Includes CP Duration and CP Duration Unit (Minutes).



The window also features a top toolbar with 'Update', 'Launch Task', 'View Parents', 'Copy', 'Delete', 'Refresh', and 'Close' buttons, and a bottom toolbar with the same set of buttons.

## Windows Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Windows Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions</a> tab to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Windows Details</b>	This section contains assorted detailed information about the task.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .
Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.
Agent Variable	Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>

<p>Agent Cluster Variable</p>	<p>Indication of whether the <b>Agent Cluster</b> field is a reference field for selecting a specific <b>Agent Cluster</b> (unchecked) or a text field for specifying the <b>Agent Cluster</b> as a variable (checked). Use the format: <code>\$(variable name)</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
<p>Credentials</p>	<p><b>Credentials</b> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.</p>
<p>Credentials Variable</p>	<p>Indication of whether the <b>Credentials</b> field is a reference field for selecting a specific <b>Credential</b> (unchecked) or a text field for specifying the <b>Credential</b> as a variable (checked). Use the format: <code>\$(variable name)</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
<p>Cluster Broadcast</p>	<p>Group of Agents, all of which will run this task (compare with Agent Cluster). You can specify a Cluster Broadcast in place of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.</p>
<p>Run with Highest Privileges</p>	<p>This option must be enabled in order to execute the task using an elevated privileges token, rather than one subject to User Account Control (UAC) restrictions. An elevated token allows a process to execute with all the privileges available to its specified credentials. For example, a task executed with an administrative account will behave as though it received permission via a UAC dialog to perform a privileged operation.</p> <p>This option will <b>not</b> give a user account privileges that have are not already granted to it. For example, taking ownership of a file is a privileged operation by default. A task will still fail even with this option selected if it is run with a regular user account that has not been granted the ability to change file ownership.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      This option only will affect tasks executed on Windows systems that support User Account Control (UAC). It will have no affect on tasks run on Windows releases prior to Vista (for example, Windows XP, Server 2003).</p> </div>

<p>Command or Script</p>	<p>Specifies whether a single command or a script is being executed.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Command (default)</li> <li>• Script</li> </ul> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      For both command-based tasks that call a <b>.vbs/.js</b> file directly, and script-based tasks that also rely on the systems association with file extension, GUI-based <b>wscript.exe</b> is associated with the <b>vbs</b> and <b>js</b> file extensions. Without explicitly calling one or the other, the Controller would use <b>wscript.exe</b>.</p> <p>The Agent system may need to be adjusted to properly use the Windows Scripting Host from the scheduler/agent environment.</p> <p>The following command can be used to set the default script host to <b>cscript.exe</b>: <code>C:\tmp&gt;cscript //h:cscript //s</code></p> </div>
<p>Command</p>	<p>If <b>Command or Script</b> = Command; Required. Command being executed on the remote machine. <b>Variables</b> supported.</p>
<p>Script</p>	<p>If <b>Command or Script</b> = Script; Required. Name of the <b>script</b> in the Controller database that will be executed by this task.</p>
<p>Parameters</p>	<p>Any arguments needed by the program to execute properly. <b>Variables</b> supported.</p>
<p>Runtime Directory</p>	<p>Directory from which the application should be executed. <b>Variables</b> supported.</p>
<p>Interact with Desktop</p>	<p>This option must be enabled for a task that runs an application with a GUI requiring some manual actions from a user (for example, clicking buttons or entering values).</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      This option is effective only for tasks executed on Windows XP or Server 2003. Windows Vista introduced the desktop isolation feature, which prevents tasks from accessing the interactive desktop session on Vista, Windows 7, Server 2008, Windows 8, and Server 2012. The Windows agent will execute the task, but the <b>Interact with Desktop</b> option has no effect. Therefore, an interactive application's GUI will not be visible on those platforms.</p> </div>
<p>Environment Variables</p>	<p>Allows you to enter environment variables needed by the program to run.</p> <p>To add a variable, click the <b>+</b> icon and enter a <b>Name</b> and <b>Value</b>. To delete a variable, select in the list of variables and click the <b>-</b> icon.</p> <p>You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath.</p>

Exit Code Processing	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Output Contains Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Failure Output Contains Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul>
Output Type	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>
Scan Output For	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.</p>
Output File (for <a href="#">Exit Code Processing</a> )	<p>Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.</p>
Exit Codes	<p>Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>
Automatic Output Retrieval	<p>Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None Do not attach any output to the task instance record.</li> <li>• Standard Output Attach all standard output.</li> <li>• Standard Error Attach standard error output.</li> <li>• File Attach the file specified in the <a href="#">Output File</a> field.</li> <li>• Standard Output/Error Attach all standard output and standard error output.</li> </ul>
Start Line	<p>If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated.</p> <ul style="list-style-type: none"> <li>• If a <b>Start Line</b> value is not specified, the default is 1.</li> <li>• If the <b>Start Line</b> value is -1, data will be retrieved starting at the end of the file.</li> </ul>


Number of Lines	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <a href="#">Retrieve Output Default Maximum Lines</a> Universal Controller system property.
Scan Text	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the <b>Number of Lines</b> above and below the first line matched.  if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for <a href="#">Automatic Output Retrieval</a> )	Required if <a href="#">Automatic Output Retrieval</a> = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the <a href="#">Exit Codes</a> field. <a href="#">Maximum Retries</a> must be greater than 0.  If this field is empty, any exit code potentially will cause a retry.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Suppress Intermediate Failures	User-defined; If the task instance is in the <a href="#">Failed status</a> , indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made: <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched.  Options are: <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>

Workflow Only	<p>Specification for whether or not to apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>- - System Default - - Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications as defined by the <a href="#">System Default Wait/Delay Workflow Only</a> system property. (Default is <b>yes</b>.)</li> <li>Yes Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</li> <li>No Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications whether or not the task is in a Workflow.</li> </ul>
<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	<p>If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a>). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.</p>
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>Time - Flag the task if it starts after the specified time.</li> <li>Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.



Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for task instances of the task.</p>
First Time Ran	<p>System-supplied; date and time this task first ran.</p>
Last Time Ran	<p>System-supplied; date and time the task last ran.</p>
Last Instance Duration	<p>System-supplied; amount of time the task took to run the last time it ran.</p>

Lowest Instance Time	System-supplied; shortest amount of time this task has taken to run.
Average Instance Time	System-supplied; average amount of time this task takes to run.
Highest Instance Time	System-supplied; longest amount of time this task has taken to run.
Number of Instances	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b>            You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" data-bbox="370 478 1481 835"> <tr> <td data-bbox="370 478 511 548"> <b>Abort Action</b> </td> <td data-bbox="511 478 1481 548">                     Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.                 </td> </tr> <tr> <td data-bbox="370 548 511 617"> <b>Email Notification</b> </td> <td data-bbox="511 548 1481 617">                     Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.                 </td> </tr> <tr> <td data-bbox="370 617 511 686"> <b>Set Variable</b> </td> <td data-bbox="511 617 1481 686">                     Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.                 </td> </tr> <tr> <td data-bbox="370 686 511 756"> <b>SNMP Notification</b> </td> <td data-bbox="511 686 1481 756">                     Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.                 </td> </tr> <tr> <td data-bbox="370 756 511 835"> <b>System Operation</b> </td> <td data-bbox="511 756 1481 835">                     Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.                 </td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .										
<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .										
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<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists of all instances of the task.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## Viewing a Windows Task Instance

When a Windows task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [Windows Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

## Windows Task Instance Details

The following Windows Task Instance Details contains information on the execution of the task shown in the [Windows Task Details](#).

Windows Task Instance Details: stonebranch-windowstask-01
Update Re-run View Parent Retrieve Output... Delete Refresh Close

Windows Task Instance
Virtual Resources
Exclusive Requests
Step Conditions
Notes

**General**

Instance Name:  Reference Id:

Task:  Invoked By:

Task Description:

Member of Business Services:  Execution User:

Virtual Resource Priority:  Hold Resources on Failure:

**Status**

Status:  Exit Code:

Status Description:

Operational Memo:

Wait Until Time:

Queued Time:

Trigger Time:  Start Time:

Launch Time:  End Time:

Duration:  CPU Time:

Process ID:

**Windows Details**

Agent:  Agent Cluster:

Agent Variable:  Agent Cluster Variable:

Credentials:  Credentials Variable:

Command or Script:  Run with Highest Privileges:

Command:

Parameters:

Runtime Directory:

Interact with Desktop:

Name	Value
No items to show.	

Exit Code Processing:

Exit Codes:

Automatic Output Retrieval:

**Retry Options**

Retry Exit Codes:

Maximum Retries:  Retry Indefinitely:

Retry Interval (Seconds):  Suppress Intermediate Failures:

Current Retry Count:

**Wait/Delay Options**

Wait To Start:  Wait Duration In Seconds:

Delay On Start:  Delay Duration In Seconds:

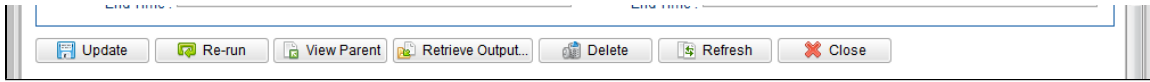
**Critical Path Options**

CP Duration:  CP Duration Unit:

**Statistics**

User Estimated End Time:  Average Estimated End Time:


Shortest Estimated End Time:  Longest Estimated End Time:







## Windows Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Windows Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	System-supplied; how the task instance was launched.  Options: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).

Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
CPU Time	System-supplied; amount of CPU time the task took to run.
Process ID	System-supplied; ID of the process that was launched.
<b>Windows Details</b>	This section contains assorted detailed information about the task instance.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .
Agent Variable	<p>Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: <code>\$(variable name)</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.

Agent Cluster Variable	<p>Indication of whether the <b>Agent Cluster</b> field is a reference field for selecting a specific <b>Agent Cluster</b> (unchecked) or a text field for specifying the <b>Agent Cluster</b> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
Credentials	<p><b>Credentials</b> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.</p>
Credentials Variable	<p>Indication of whether the <b>Credentials</b> field is a reference field for selecting a specific <b>Credential</b> (unchecked) or a text field for specifying the <b>Credential</b> as a variable (checked). Use the format: <code>\$(variable name)</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Command or Script	<p>Specifies whether a single command or a script is being executed.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Command (default)</li> <li>• Script</li> </ul> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      For both command-based tasks that call a <b>.vbs/.js</b> file directly, and script-based tasks that also rely on the systems association with file extension, GUI-based <b>wscript.exe</b> is associated with the <b>vbs</b> and <b>js</b> file extensions. Without explicitly calling one or the other, the Controller would use <b>wscript.exe</b>.</p> <p>The Agent system may need to be adjusted to properly use the Windows Scripting Host from the scheduler/agent environment.</p> <p>The following command can be used to set the default script host to <b>cscript.exe</b>: <code>C:\tmp&gt;cscript //h:cscript //s</code></p> </div>
Command	<p>If <b>Command or Script</b> = Command; Required. Command being executed on the remote machine. <a href="#">Variables</a> supported.</p>
Script	<p>If <b>Command or Script</b> = Script; Required. Name of the <b>script</b> in the Controller database that will be executed by this task.</p>
Parameters	<p>Any arguments needed by the program to execute properly. <a href="#">Variables</a> supported.</p>

Runtime Directory	Directory from which the application should be executed. <a href="#">Variables</a> supported.
Interact with Desktop	<p>This option must be enabled for a task that runs an application with a GUI requiring some manual actions from a user (for example, clicking buttons or entering values).</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      This option is effective only for tasks executed on Windows XP or Server 2003. Windows Vista introduced the desktop isolation feature, which prevents tasks from accessing the interactive desktop session on Vista, Windows 7, Server 2008, Windows 8, and Server 2012. The Windows agent will execute the task, but the <b>Interact with Desktop</b> option has no effect. Therefore, an interactive application's GUI will not be visible on those platforms.</p> </div>
Environment Variables	<p>Allows you to enter environment variables needed by the program to run.</p> <p>To add a variable, click the + icon and enter a <b>Name</b> and <b>Value</b>. To delete a variable, select in the list of variables and click the - icon.</p> <p>You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath.</p>
Exit Code Processing	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Success Exitcode Range</b> Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• <b>Failure Exitcode Range</b> Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• <b>Success Output Contains</b> Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• <b>Failure Output Contains</b> Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• <b>Step Conditions (z/OS only)</b> Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul>
Output Type	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>
Exit Codes	<p>Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>
Scan Output For	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.</p>
Output File (for <a href="#">Exit Code Processing</a> )	<p>Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.</p>



Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record.  Options: <ul style="list-style-type: none"> <li>• None Do not attach any output to the task instance record.</li> <li>• Standard Output Attach all standard output.</li> <li>• Standard Error Attach standard error output.</li> <li>• File Attach the file specified in the <a href="#">Output File</a> field.</li> <li>• Standard Output/Error Attach all standard output and standard error output.</li> </ul>
Start Line	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. <ul style="list-style-type: none"> <li>• If a <b>Start Line</b> value is not specified, the default is 1.</li> <li>• If the <b>Start Line</b> value is -1, data will be retrieved starting at the end of the file.</li> </ul>
Number of Lines	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <a href="#">Retrieve Output Default Maximum Lines</a> Universal Controller system property.
Scan Text	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the <b>Number of Lines</b> above and below the first line matched.  if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for <a href="#">Automatic Output Retrieval</a> )	Required if <a href="#">Automatic Output Retrieval</a> = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the <a href="#">Exit Codes</a> field. <a href="#">Maximum Retries</a> must be greater than 0.  If this field is empty, any exit code potentially will cause a retry.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.

<p>Suppress Intermediate Failures</p>	<p>User-defined; If the task instance is in the <a href="#">Failed status</a>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
<p>Next Retry Time</p>	<p>System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.</p>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <a href="#">Wait Time</a> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <a href="#">Wait To Start</a> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <a href="#">Wait To Start</a> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>

Wait Duration	If <a href="#">Wait To Start</a> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <a href="#">Wait To Start</a> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.

Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Average Estimated End Time	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Longest Estimated End Time	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>Delete</b>	Deletes the current record.

<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Output</b>	<p>Displays output generated from the process, if any, based on specifications provided by the user in the <a href="#">Automatic Output Retrieval</a> fields in the task Details.</p> <p>If automatic output retrieval was not available or was not selected, output can be obtained by clicking the <a href="#">Retrieve Output</a> button.</p>
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Running a Windows Task

You can run a Windows task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the Windows tasks list or Windows Task Details [Action menu](#).
- As part of a [Workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## zOS Task

Information on z/OS tasks is contained on the following pages:

- [Creating and Running a z/OS Task](#)
- [Special Processing on z/OS Tasks](#)
- [Creating Step Conditions](#)
- [Creating Step Actions](#)
- [Creating Restart Criteria](#)

## Creating and Running a z/OS Task

- [Before You Begin](#)
- [Built-In Variables](#)
- [Creating a z/OS Task](#)
  - [z/OS Task Details](#)
  - [z/OS Task Details Field Descriptions](#)
- [Viewing a z/OS Task Instance](#)
  - [z/OS Task Instance Details](#)
  - [z/OS Task Instance Details Field Descriptions](#)
- [Running a z/OS Task](#)
- [Monitoring Task Execution](#)

### Before You Begin

The z/OS task allow you to run a platform-specific application on a z/OS machine. To run a z/OS task, you must first complete the following tasks:

- [Install Universal Agent for z/OS](#) on a z/OS machine.
- [Launch the Agent](#). When the Agent connects with the Universal Controller, it automatically creates an [Agent resource definition](#) in the database.
- Optionally, customize the Agent heartbeat and log levels, as described in [z/OS Agent Details Field Descriptions](#).

### Built-In Variables

The following [built-in variables](#) can be used in a z/OS task to pass data where appropriate:

- [Agent-Based Task Instance variables](#)
- [Task Instance variables](#)
- [z/OS Task Instance variables](#)

### Creating a z/OS Task



**Step 1** From the Automation Center navigation pane, select **Tasks > z/OS Tasks**. The z/OS Tasks list displays a list of all currently defined z/OS tasks.

Below the list, z/OS Task Details for a new z/OS task displays.

The screenshot shows the 'z/OS Tasks' interface. At the top, there is a list of 5 tasks with columns for Task Name, Task Description, JCL Location, Updated By, and Updated. Below the list is the 'z/OS Task Details' form, which is currently in a collapsed state. The form has tabs for General, Step Conditions, Restart Criteria, Variables, Actions, Virtual Resources, Mutually Exclusive, Instances, and Triggers. The General tab is active, showing fields for Task Name, Version (1), Task Description, Member of Business Services, Hold on Start, Virtual Resource Priority (10), and Hold Resources on Failure. Below this is the z/OS Details section with Agent and Agent Variable fields.

**Step 2** Enter/select Details for a new z/OS task, using the field descriptions below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily **hide the list** above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To **open** an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the **Details icon** next to a record name in the list, or right-click a record in the list and then click **Open** in the **Action menu** that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the **Action menu** that displays, to display the record Details under a new tab on the record list page (see **Record Details as Tabs**).

**z/OS Task Details**


The following z/OS Task Details is for an existing Linux/Unix task.



Depending on the values that you enter / select for these fields, and whether or not the z/OS task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the z/OS Task Details.


### z/OS Task Details Field Descriptions


The following table describes the fields, buttons, and tabs that display in the z/OS Task Details.



Field Name	Description
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<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions tab</a> to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>z/OS Details</b>	This section contains assorted detailed information about the task.
Agent	Name of the <a href="#">Agent resource</a> that identifies the machine where the operation will run.
Agent Variable	Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in <a href="#">Variables and Functions</a> .  <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
Credentials	<a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.

<p>Credentials Variable</p>	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
<p>JCL Location</p>	<p>File and member name containing the JCL script.</p> <p>When you are using the <code>JCL_LIBRARY</code> feature, you can substitute the name of the library with a string starting with "&amp;", that names the library specified in the <code>uags.conf</code> file with the <code>JCL_library</code> definitions. For example, the name of a job might look like the following:</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px; text-align: center;"> <pre>&amp;PRODLIB ( PAYJOB01 )</pre> </div>
<p>Use JCL Override Library</p>	<p>Allows the task to work with a JCL override library on the target system. If this option is selected, the Agent will check the JCL override path (specified in <a href="#">JCL Override Location</a>) before submitting the job from <a href="#">JCL Location</a>.</p> <p>If a JCL member is found at the override path, the job is submitted from there. Otherwise, the Agent will look to the <a href="#">JCL Location</a> path for submission.</p> <p>The task instance will display the actual path that was used for job submission in <a href="#">Submitted JCL Location</a>.</p>
<p>JCL Override Location</p>	<p>If <a href="#">Use JCL Override Library</a> is selected; Required. Specifies the file and member name potentially containing an override JCL script. The Agent will check this location for JCL before looking in the standard <a href="#">JCL Location</a>. If JCL is found in this location, the job will be submitted from there. If JCL is not found in this location, the Agent will submit the job from the standard <a href="#">JCL Location</a>.</p> <p>Missing override JCL is not considered an error condition.</p> <p>As with <a href="#">JCL Location</a>, when you are using the <code>JCL_LIBRARY</code> feature, you can substitute the name of the library with a string starting with "&amp;" that names the library specified in the <code>uags.conf</code> file with the <code>JCL_library</code> definitions.</p>
<p>Delete Override JCL</p>	<p>If <a href="#">Use JCL Override Library</a> is selected; Optional. Allows the task to define criteria that will control the automated clean-up of the override JCL. If this option is not selected, the Controller and Agent will take no action to delete the override JCL from the target system.</p>
<p>Override Instance Count for Deletion</p>	<p>If <a href="#">Delete Override JCL</a> is selected; Required. Specifies the number of successful override instances that must occur before the override JCL library member is deleted.</p> <p>When the deletion criteria has been satisfied, the Controller will instruct the Agent to delete the member specified in <a href="#">JCL Override Location</a>.</p> <p>An override instance is considered successful only if the ending state in the controller is <code>SUCCESS</code>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      Manual resubmissions of a task instance do not increment the tracked number of successful override instances that go towards satisfying the deletion criteria.</p> <p>If a task is not submitted from the override location (that is, no override member was found), the task's "successful override instance count" is reset to 0.</p> </div>
<p>Last Override Deletion</p>	<p>If <a href="#">Delete Override JCL</a> is selected; system-supplied. Displays after the specified override JCL member is deleted. The date and time the last override JCL deletion occurred.</p>

<p>Number of Override Instances</p>	<p>If <a href="#">Delete Override JCL</a> is selected; Read only; system-supplied. Indicates the number of successful override instances that have occurred for this task. This number is checked against the deletion criteria to determine when the override JCL member should be deleted.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                  This number is automatically reset to 0 by the system if a task instance does not submit from override JCL (that is, no override member was found).</p> </div>
<p>New Jobname</p>	<p>Job name that will replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL.</p> <p>This value should be validated before the job is launched to avoid JES start failures.</p> <p>The syntax of a job name is:</p> <ul style="list-style-type: none"> <li>• 1-8 characters</li> <li>• Upper case</li> <li>• Name must start with an alphabetic or \$, #, @ character.</li> <li>• Remaining characters are alphanumeric or \$, #, @.</li> <li>• No spaces or tabs.</li> </ul>
<p>New Jobclass</p>	<p>New Jobclass to replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL.</p>
<p>New Msgclass</p>	<p>New MSGCLASS to replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL.</p>
<p>Procedure Library</p>	<p>The PROCLIB field allows for defining a JES2 PROCLIB control statement in the job JCL. For example, a PROCLIB value of PROC01 will result in the following JES2 control statement generated in the job JCL:</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre>/*JESPARM PROCLIB=PROC01</pre> </div> <p>The PROCLIB value must refer to a ddname defined in the JES2 procedure. Refer to IBM MVS JCL Reference for more information regarding the JES2 PROCLIB control statement.</p>
<p>Schedule ID</p>	<p>CA7 Schedule ID; for CA7 toleration only (see <a href="#">CA7/CA11 Toleration</a>).</p>

<p>Parameters</p>	<p>Displays a list of parameters that will be inserted into the JCL. Each parameter consists of a Name and a Value. You can enter as many parameters as needed.</p> <p>To add a parameter, click the <b>+</b> icon; add a Name and Value, and click the <b>Update</b> button. To delete a parameter, click the parameter on the list, the <b>-</b> icon, and the <b>Update</b> button.</p> <p>Each parameter that you enter creates a separate JCL construct called the SET command. Each one appears as a new line inserted dynamically into the JCL submitted to the Controller for the current execution. The JCL is not permanently modified.</p> <p>For example, you might specify a parameter Name = RUNTYPE and Value = PROD. This results in the following JCL SET statement being inserted in the job after the job card:</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre>// SET RUNTYPE=PROD</pre> </div> <p>The Parameter fields also support two additional special functions:</p> <ul style="list-style-type: none"> <li>• They allow you to specify any steps you want skipped during the job run. See <a href="#">Skipping Steps during Initial Run</a> for detailed instructions.</li> <li>• They allow you to add data to DD* input streams. See <a href="#">Using Variables in JCL and In-Stream Data Sets</a> for detailed instructions.</li> </ul>
<p>Exit Code Processing</p>	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Output Contains Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Failure Output Contains Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> If Step Conditions has been selected for Exit Code Processing, and you then select a different option, a confirmation pop-up displays to warn that any defined Step Conditions will be removed.</p> </div>
<p>Output Type</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>
<p>Scan Output For</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.</p>
<p>Output File (for <a href="#">Exit Code Processing</a>)</p>	<p>Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.</p>
<p>Exit Codes</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>

<p>Automatic Output Retrieval</p>	<p>Specifies whether you want the Controller to automatically retrieve output from the job and attach it to the task instance record.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None Do not attach any output to the task instance record.</li> <li>• File Attach the file specified in the <a href="#">Output File</a> field.</li> <li>• Joblog Attach output from the z/OS joblog.</li> </ul>
<p>Start Line</p>	<p>If <a href="#">Automatic Output Retrieval</a> = Joblog or File; Allows you to instruct the Controller to retrieve data beginning at the line indicated. If a Start Line value is not specified on the screen, the default is 1.</p>
<p>Number of Lines</p>	<p>If <a href="#">Automatic Output Retrieval</a> = Joblog or File; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <a href="#">Retrieve Output Default Maximum Lines</a> Universal Controller system property.</p>
<p>Scan Text</p>	<p>If <a href="#">Automatic Output Retrieval</a> = Joblog or File; Instructs the Controller to scan the data for the text specified and retrieve only that. The Controller will process this field as a regular expression.</p>
<p>Output File (for <a href="#">Automatic Output Retrieval</a>)</p>	<p>Required if <a href="#">Automatic Output Retrieval</a> = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.</p>
<p><b>Retry Options</b></p>	<p>This section contains specifications for retrying the task.</p>
<p>Auto-Restart Option</p>	<p>Allows the z/OS job to be resubmitted with controlled step selection. This option is processed when/if a task transitions to a failed state. It works in conjunction with the <a href="#">Maximum Retries</a>, <a href="#">Retry Interval</a>, and <a href="#">Retry Indefinitely</a> options.</p> <div data-bbox="318 1167 1445 1272" style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> The <a href="#">Maximum Retries</a> value must be greater than 0 for the Auto-Restart Option to be processed.</p> </div> <p>Options:</p> <ul style="list-style-type: none"> <li>• None No job steps will be automatically selected for restart.</li> <li>• Restart From First Job Step All restartable job steps will be selected for restart.</li> <li>• Restart From Failed Job Step All restartable job steps from the failed step to the last job step will be selected for restart.</li> <li>• Use Restart Criteria The entries in the <a href="#">Restart Criteria</a> tab will be evaluated. If a Restart Criteria entry matches the failure scenario, the step selection will be based on the option specified in the matching Restart Criteria entry (see <a href="#">Creating Restart Criteria</a>).</li> </ul> <p>If you select an option other than <b>None</b> for a task that ends in a failed state, audit records will be generated to record the step selection that took place for the restart. The audit records include all restart options, criteria matching, and directives that were used to select the set of job steps to be re-run. z/OS auto-restart audit records show up as audit type <b>z/OS Auto-Restart</b> from source <b>Task Instance</b>.</p> <div data-bbox="318 1713 1445 1843" style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> If Use Restart Criteria has been selected for Auto-Restart Option, and you then select a different option, a confirmation pop-up displays to warn that any defined Restart Criteria will be removed.</p> </div>
<p>Maximum Retries</p>	<p>User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.</p>


<p>Retry Indefinitely</p>	<p>User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.</p>
<p>Retry Interval (Seconds)</p>	<p>User-defined; number of seconds between each retry.</p>
<p>Suppress Intermediate Failures</p>	<p>User-defined; If the task instance is in the <a href="#">Failed status</a>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>



<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p>Workflow Only</p>	<p>Specification for whether or not to apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• - - System Default - - Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications as defined by the <b>System Default Wait/Delay Workflow Only</b> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</li> <li>• No Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications whether or not the task is in a Workflow.</li> </ul>

<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <b>Started Late</b> field; the field is checked if the instance started after the specified time. The <b>Started Late</b> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <b>Finished Late</b> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a> ). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <b>Finished Early</b> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.

Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for task instances of the task.</p>
First Time Ran	<p>System-supplied; date and time this task first ran.</p>
Last Time Ran	<p>System-supplied; date and time the task last ran.</p>
Last Instance Duration	<p>System-supplied; amount of time the task took to run the last time it ran.</p>
Lowest Instance Time	<p>System-supplied; shortest amount of time this task has taken to run.</p>

<b>Average Instance Time</b>	System-supplied; average amount of time this task takes to run.
<b>Highest Instance Time</b>	System-supplied; longest amount of time this task has taken to run.
<b>Number of Instances</b>	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
<b>Step Conditions</b>	Lists all <a href="#">step conditions</a> defined for this task.
<b>Restart Criteria</b>	Displays a list of all <a href="#">restart criteria</a> defined for this task.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<p><b>Actions</b></p>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" data-bbox="277 478 1484 840"> <tr> <td data-bbox="277 478 418 548"><b>Abort Action</b></td> <td data-bbox="418 478 1484 548">Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td data-bbox="277 548 418 621"><b>Email Notification</b></td> <td data-bbox="418 548 1484 621">Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td data-bbox="277 621 418 695"><b>Set Variable</b></td> <td data-bbox="418 621 1484 695">Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td data-bbox="277 695 418 768"><b>SNMP Notification</b></td> <td data-bbox="418 695 1484 768">Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td data-bbox="277 768 418 840"><b>System Operation</b></td> <td data-bbox="418 768 1484 840">Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
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<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<p><b>Virtual Resources</b></p>	<p>Lists all <a href="#">Virtual Resources</a> to which this task is assigned.</p>										
<p><b>Mutually Exclusive</b></p>	<p>Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.</p>										
<p><b>Instances</b></p>	<p>Lists all instances of the task.</p>										
<p><b>Triggers</b></p>	<p>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: &lt;current task name&gt;#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a>.</p>										
<p><b>Notes</b></p>	<p>Lists all <a href="#">notes</a> associated with this record.</p>										
<p><b>Versions</b></p>	<p>Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a>.</p>										

## Viewing a z/OS Task Instance

When a z/OS task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [z/OS Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

### z/OS Task Instance Details

The following z/OS Task Instance Details contains information on the successful completion of a z/OS task.

z/OS Task Instance Details: stonebranch-zOstask-01
Update Re-run View Parent Retrieve Output... Delete Refresh Close

z/OS Task Instance
Step Conditions Restart Criteria Restartable Job Steps Confirm JCL Changes Virtual Resources Exclusive Requests

**General**

Instance Name:  Reference Id:

Task:  Invoked By:

Task Description:

Member of Business Services:  Execution User:

Virtual Resource Priority:  Hold Resources on Failure:

**Status**

Status:  Exit Code:

Status Description:

Operational Memo:

Wait Until Time:

Queued Time:

Trigger Time:  Start Time:

Launch Time:  End Time:

Duration:  CPU Time:

Job ID:  Job Name:

**z/OS Details**

Agent:

Agent Variable:

Credentials:

Credentials Variable:

JCL Location:

Use JCL Override Library:

New Jobname:  Procedure Library:

New Jobclass:  Schedule Id:

New Msgclass:  JCL Changes Confirmed:

Name	Value
*@CODE1	4
*@CODE2	8

Exit Code Processing:

Exit Codes:

Automatic Output Retrieval:

**Retry Options**

Retry Exit Codes:

Maximum Retries:  Retry Indefinitely:

Retry Interval (Seconds):  Suppress Intermediate Failures:

Current Retry Count:

**Wait/Delay Options**

Wait To Start:  Wait Duration In Seconds:

Delay On Start:  Delay Duration In Seconds:

**Critical Path Options**

CP Duration:  CP Duration Unit:

**Statistics**

User Estimated End Time:  Average Estimated End Time:


Shortest Estimated End Time:  Longest Estimated End Time:

Update Re-run View Parent Retrieve Output... Delete Refresh Close



## z/OS Task Instance Details Field Descriptions


The following table describes the fields, buttons, and tabs that display in z/OS Task Instance Details.


Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	System-supplied; how the task instance was launched.  Options: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.

Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
CPU Time	System-supplied; amount of CPU time the task took to run.
Job ID	Job identifier of the job executed by the task instance.
Job Name	Name of the job executed by the task instance.
<b>z/OS Details</b>	This section contains assorted detailed information about the task instance.
Agent	Name of the <a href="#">Agent resource</a> that identifies the machine where the operation will run.
Agent Variable	<p>Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
Credentials	<a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.





<p>Credentials Variable</p>	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
<p>JCL Location</p>	<p>File and member name containing the JCL script.</p> <p>When you are using the <code>JCL_LIBRARY</code> feature, you can substitute the name of the library with a string starting with "&amp;", that names the library specified in the <code>uags.conf</code> file with the <code>JCL_library</code> definitions. For example, the name of a job might look like the following:</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px; width: fit-content;"> <pre>&amp;PRODLIB ( PAYJOB01 )</pre> </div>
<p>Use JCL Override Library</p>	<p>Allows the task to work with a JCL override library on the target system. If this option is selected, the Agent will check the JCL override path (specified in <a href="#">JCL Override Location</a>) before submitting the job from <a href="#">JCL Location</a>.</p> <p>If a JCL member is found at the override path, the job is submitted from there. Otherwise, the Agent will look to the <a href="#">JCL Location</a> path for submission.</p> <p>The task instance will display the actual path that was used for job submission in <a href="#">Submitted JCL Location</a>.</p>
<p>JCL Override Location</p>	<p>If <a href="#">Use JCL Override Library</a> is selected; Required. Specifies the file and member name potentially containing an override JCL script. The Agent will check this location for JCL before looking in the standard <a href="#">JCL Location</a>. If JCL is found in this location, the job will be submitted from there. If JCL is not found in this location, the Agent will submit the job from the standard <a href="#">JCL Location</a>.</p> <p>Missing override JCL is not considered an error condition.</p> <p>As with <a href="#">JCL Location</a>, when you are using the <code>JCL_LIBRARY</code> feature, you can substitute the name of the library with a string starting with "&amp;" that names the library specified in the <code>uags.conf</code> file with the <code>JCL_library</code> definitions.</p>
<p>Delete Override JCL</p>	<p>If <a href="#">Use JCL Override Library</a> is selected; Optional. Allows the task to define criteria that will control the automated clean-up of the override JCL. If this option is not selected, the Controller and Agent will take no action to delete the override JCL from the target system.</p>
<p>Submitted JCL Location</p>	<p>System-supplied; actual path that was used for job submission.</p>
<p>Override Instance Count for Deletion</p>	<p>If <a href="#">Delete Override JCL</a> is selected; Required. Specifies the number of successful override instances that must occur before the override JCL library member is deleted.</p> <p>When the deletion criteria has been satisfied, the Controller will instruct the Agent to delete the member specified in <a href="#">JCL Override Location</a>.</p> <p>An override instance is considered successful only if the ending state in the controller is <code>SUCCESS</code>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      Manual resubmissions of a task instance do not increment the tracked number of successful override instances that go towards satisfying the deletion criteria.</p> <p>If a task is not submitted from the override location (that is, no override member was found), the task's "successful override instance count" is reset to 0.</p> </div>

<p>Number of Override Instances</p>	<p>If <a href="#">Delete Override JCL</a> is selected; Read only; system-supplied. Indicates the number of successful override instances that have occurred for this task. This number is checked against the deletion criteria to determine when the override JCL member should be deleted.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                  This number is automatically reset to 0 by the system if a task instance does not submit from override JCL (that is, no override member was found).</p> </div>
<p>New Jobname</p>	<p>Job name that will replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL.</p> <p>This value should be validated before the job is launched to avoid JES start failures.</p> <p>The syntax of a job name is:</p> <ul style="list-style-type: none"> <li>• 1-8 characters</li> <li>• Upper case</li> <li>• Name must start with an alphabetic or \$, #, @ character.</li> <li>• Remaining characters are alphanumeric or \$, #, @.</li> <li>• No spaces or tabs.</li> </ul>
<p>New Jobclass</p>	<p>New Jobclass to replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL.</p>
<p>New Msgclass</p>	<p>New MSGCLASS to replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL.</p>
<p>Procedure Library</p>	<p>The PROCLIB field allows for defining a JES2 PROCLIB control statement in the job JCL. For example, a PROCLIB value of PROC01 will result in the following JES2 control statement generated in the job JCL:</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre>/*JESPARM PROCLIB=PROC01</pre> </div> <p>The PROCLIB value must refer to a ddname defined in the JES2 procedure. Refer to IBM MVS JCL Reference for more information regarding the JES2 PROCLIB control statement.</p>
<p>Schedule ID</p>	<p>CA7 Schedule ID; for CA7 toleration only (see <a href="#">CA7/CA11 Toleration</a>).</p>
<p>JCL Changes Confirmed</p>	<p>If <b>Status = Confirmation Required</b>; indicates that JCL changes have been confirmed. You cannot rerun a job if this field is not selected.</p>

<p>Parameters</p>	<p>Displays a list of parameters that will be inserted into the JCL. Each parameter consists of a Name and a Value. You can enter as many parameters as needed.</p> <p>To add a parameter, click the <b>+</b> icon; add a Name and Value, and click the <b>Update</b> button. To delete a parameter, click the parameter on the list, the <b>-</b> icon, and the <b>Update</b> button.</p> <p>Each parameter that you enter creates a separate JCL construct called the SET command. Each one appears as a new line inserted dynamically into the JCL submitted to the Controller for the current execution. The JCL is not permanently modified.</p> <p>For example, you might specify a parameter Name = RUNTYPE and Value = PROD. This results in the following JCL SET statement being inserted in the job after the job card:</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre>// SET RUNTYPE=PROD</pre> </div> <p>The Parameter fields also support two additional special functions:</p> <ul style="list-style-type: none"> <li>• They allow you to specify any steps you want skipped during the job run. See <a href="#">Skipping Steps during Initial Run</a> for detailed instructions.</li> <li>• They allow you to add data to DD* input streams. See <a href="#">Using Variables in JCL and In-Stream Data Sets</a> for detailed instructions.</li> </ul>
<p>Exit Code Processing</p>	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Output Contains Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Failure Output Contains Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> If Step Conditions has been selected for Exit Code Processing, and you then select a different option, a confirmation pop-up displays to warn that any defined Step Conditions will be removed.</p> </div>
<p>Output Type</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>
<p>Scan Output For</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.</p>
<p>Output File (for <a href="#">Exit Code Processing</a>)</p>	<p>Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.</p>
<p>Exit Codes</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>

<p>Automatic Output Retrieval</p>	<p>Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None Do not attach any output to the task instance record.</li> <li>• Standard Output Attach all standard output.</li> <li>• Standard Error Attach standard error output.</li> <li>• File Attach the file specified in the <a href="#">Output File</a> field.</li> <li>• Standard Output/Error Attach all standard output and standard error output.</li> </ul>
<p>Start Line</p>	<p>If <a href="#">Automatic Output Retrieval</a> = Joblog or File; Allows you to instruct the Controller to retrieve data beginning at the line indicated. If a Start Line value is not specified on the screen, the default is 1.</p>
<p>Number of Lines</p>	<p>If <a href="#">Automatic Output Retrieval</a> = Joblog or File; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <a href="#">Retrieve Output Default Maximum Lines</a> Universal Controller system property.</p>
<p>Scan Text</p>	<p>If <a href="#">Automatic Output Retrieval</a> = Joblog or File; Instructs the Controller to scan the data for the text specified and retrieve only that. The Controller will process this field as a regular expression.</p>
<p>Output File (for Automatic Output Retrieval)</p>	<p>Required if <a href="#">Automatic Output Retrieval</a> = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.</p>
<p><b>Retry Options</b></p>	<p>This section contains specifications for retrying the task.</p>

<p>Auto-Restart Option</p>	<p>Allows the z/OS job to be resubmitted with controlled step selection. This option is processed when/if a task transitions to a failed state. It works in conjunction with the <a href="#">Maximum Retries</a>, <a href="#">Retry Interval</a>, and <a href="#">Retry Indefinitely</a> options.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;">  <b>Note</b>                      The <a href="#">Maximum Retries</a> value must be greater than 0 for the Auto-Restart Option to be processed.                 </div> <p>Options:</p> <ul style="list-style-type: none"> <li>• None No job steps will be automatically selected for restart.</li> <li>• Restart From First Job Step All restartable job steps will be selected for restart.</li> <li>• Restart From Failed Job Step All restartable job steps from the failed step to the last job step will be selected for restart.</li> <li>• Use Restart Criteria The entries in the <a href="#">Restart Criteria tab</a> will be evaluated. If a Restart Criteria entry matches the failure scenario, the step selection will be based on the option specified in the matching Restart Criteria entry (see <a href="#">Creating Restart Criteria</a>).</li> </ul> <p>If you select an option other than <b>None</b> for a task that ends in a failed state, audit records will be generated to record the step selection that took place for the restart. The audit records include all restart options, criteria matching, and directives that were used to select the set of job steps to be re-run. z/OS auto-restart audit records show up as audit type <b>z/OS Auto-Restart</b> from source <b>Task Instance</b>.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;">  <b>Note</b>                      If Use Restart Criteria has been selected for Auto-Restart Option, and you then select a different option, a confirmation pop-up displays to warn that any defined Restart Criteria will be removed.                 </div>
<p>Maximum Retries</p>	<p>User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.</p>
<p>Retry Indefinitely</p>	<p>User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.</p>
<p>Retry Interval (Seconds)</p>	<p>User-defined; number of seconds between each retry.</p>
<p>Current Retry Count</p>	<p>System-supplied; current number of times that the Controller has retried the task after it first went to failure status.</p>
<p>Suppress Intermediate Failures</p>	<p>User-defined; If the task instance is in the <a href="#">Failed status</a>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
<p>Next Retry Time</p>	<p>System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.</p>
<p><a href="#">Wait / Delay Options</a></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>

<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>

Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.

Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.



<b>Average Estimated End Time</b>	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Longest Estimated End Time</b>	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Projected End Time</b>	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <i>critical path duration</i> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the z/OS Task Instance Details that provide access to additional information about the task instance.
<b>Step Conditions</b>	Lists all <a href="#">step conditions</a> defined for this task.
<b>Restart Criteria</b>	Displays a list of all <a href="#">restart criteria</a> defined for this task.
<b>Restartable Job Steps</b>	(See <a href="#">Re-running a z/OS Task</a> .)
<b>Confirm JCL Changes</b>	(See <a href="#">Re-running a z/OS Task</a> .)
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.

<b>Output</b>	Displays output generated from the process, if any, based on specifications provided by the user in the <a href="#">Automatic Output Retrieval</a> fields in the task Details.  If automatic output retrieval was not available or was not selected, output can be obtained by clicking the <a href="#">Retrieve Output</a> button.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Running a z/OS Task

You can run a z/OS task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the z/OS tasks list or z/OS Task Details [Action menu](#).
- As part of a [Workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## Special Processing on zOS Tasks

- Overview
- Using Variables in JCL and In-Stream Data Sets
  - JCL Symbolic Parameters
  - Universal Controller Parameters
- Skipping Steps during Initial Run
- Overriding Key JCL Parameters from Universal Controller
- Disabling Automatic Data Set Deletion
- Re-running a z/OS Task
  - Confirming JCL Changes
  - Re-run a z/OS Task from a Specific Step
  - Restartable Job Steps List Column Descriptions
  - Confirm JCL Changes Tab Column Descriptions
- Interactively Ignoring a Step Code to Complete a Task
- CA7/CA11 Toleration
  - Non-Restartable Customized Job Steps
  - SCHID - Overriding the CA7 Schedule ID
- Non-Restartable Job Steps
- Viewing Re-run Reports
- Viewing Audit Trails on a Restart

### Overview

The following special processing features are available for running z/OS tasks:

- Using Variables in JCL and In-Stream Data Sets
- Skipping Steps during Initial Run
- Overriding Key JCL Parameters from Universal Controller

The following failure processing features are available for handling job failures:

- Re-running a z/OS Task
- Interactively Ignoring a Stepcode to Force a Task to Complete

The Controller supports compatibility with other schedulers:

- CA7/CA11 Toleration

The Controller provides the following reports that track error processing:

- Viewing Re-run Reports
- Viewing Audit Trails on a Restart

Each of these features is described in detail below.

### Using Variables in JCL and In-Stream Data Sets

There are two categories of variables that can be defined in z/OS task Details:

- JCL Symbolic Parameters
- Universal Controller Parameters

Parameter values can use Universal Controller built-in or user-defined variables.

#### JCL Symbolic Parameters

Use the z/OS Task Details [Parameters](#) field to specify JCL symbolic parameters to be used in the JCL.

Any parameter name that does not start with \*@ is considered a JCL symbolic parameter. JCL symbolic parameters result in the Controller adding a JCL SET statement to the JCL before the first step EXEC statement.

As an example, a z/OS Task parameter name of PHLQ and value of APP.PROD will result in the following JCL SET statement being added to the JCL:

```
// SET PHLQ=APP.PROD
```

The PHLQ symbolic parameter in the example above can then be used in the remaining JCL as described by the IBM JCL Reference.

### Universal Controller Parameters

Use the z/OS Task Details [Parameters](#) field to specify parameters that can be used in any JCL statement and in in-stream data sets.

In-stream data sets are typically defined with a DD \* JCL statement. the Controller will substitute the parameter values in the JCL statements and in the in-stream data before the JCL is submitted to JES.

Universal Controller parameters are defined with a parameter name that starts with the character sequence \*@. The parameters are referenced in the JCL and in-stream data by prefixing the parameter name with the @ character.

The following steps add a Universal Controller parameter with the name \*@DATE1 and a value of 20110601:

<b>Step 1</b>	Open the z/OS task.
<b>Step 2</b>	In the <a href="#">Parameters</a> field, click the + icon.
<b>Step 3</b>	<p>Add a parameter in the following format:</p> <ul style="list-style-type: none"> <li>Name is the name of a variable preceded with @. For example: *@DATE1.</li> <li>Value is the value you want to set to the variable. For example: 20110601.</li> </ul>
<b>Step 4</b>	<p>When the JCL is submitted for execution, the parameter *@DATE1 (shown in the following example) will be substituted with the value 20110601 in the JCL or in any in-stream data. The example also shows the *@DATE1 parameter being used in an in-stream data and in a JCL IF statement:</p> <pre>//INPUT DD * @DATE1 /*</pre> <pre>//AIF IF @DATE1 &gt; 20110101 THEN</pre> <p>If a Universal Controller parameter must be concatenated with a non-space character, end the parameter name with a period (.). The example below uses the *@DATE1 parameter concatenated with a non-space character in an in-stream data set:</p> <pre>//INPUT DD * DATE@DATE1.ACT9898 /*</pre>

### Skipping Steps during Initial Run

In a z/OS task, you can specify that one or more steps from the JCL should be skipped when the Controller launches the job. You achieve this by adding SKIPSTNN variables (or parameters) to your z/OS task record.

To configure your z/OS task to skip specific JCL steps:

<b>Step 1</b>	Open the z/OS task.
<b>Step 2</b>	In the <a href="#">Parameters</a> field, click the + icon.

<b>Step 3</b>	<p>Add a parameter in the following format:</p> <ul style="list-style-type: none"> <li>• Name = SKIPSTAA (SKIPST is a required string. AA is any combination of alphanumerics used to make this SKIPST command unique. (You can add as many SKIPST commands as needed.)</li> <li>• Value = STEPNAME (JCL step name)</li> </ul>
<b>Step 4</b>	<p>Repeat Steps 2 and 3 for each step you want to skip. Change the AA portion of the SKIPST for each parameter you add. Each Name must be unique.</p> <p>For example, you could enter parameters:</p> <ul style="list-style-type: none"> <li>• SKIPST01, STEP03</li> <li>• SKIPST02, STEP05</li> </ul>

## Overriding Key JCL Parameters from Universal Controller

When you launch a z/OS task from the Controller, you can specify a different Jobname, Jobclass, Msgclass, Schedule ID or add a JOBPARM card. This enables you to run your JCL jobs from the Controller without having to go in and modify your JCL. You can do so by entering new value into the appropriate field in the [z/OS Task Details](#).

## Disabling Automatic Data Set Deletion

Universal Automation Center Agent (UAG) will automatically detect and delete data sets that would cause a **NOT CATLGD 2** condition. The data set deletion takes place before the job is started. Starting with UAG 5.1.0.16, automatic data set deletion can be disabled for a z/OS task by defining the OPSDSEDEL parameter with a value of NO in the z/OS task definition.

To configure your z/OS task with automatic data set deletion disabled:

<b>Step 1</b>	Open the z/OS task.
<b>Step 2</b>	In the <a href="#">Parameters</a> field, click the <b>+</b> icon.
<b>Step 3</b>	<p>Add a parameter in the following format:</p> <ul style="list-style-type: none"> <li>• Name = OPSDSEDEL</li> <li>• Value = NO</li> </ul>

The OPSDSEDEL parameter accepts a value of YES (the default) or NO.

- A value of YES specifies that automatic data set deletion is enabled for the z/OS task.
- A value of NO specifies that automatic data set deletion is disabled for the z/OS task.

The [Re-run Report](#) will indicate if the feature has been disabled.

## Re-running a z/OS Task

When you re-run a z/OS task, you must select job steps in the task to include in the re-run; you cannot simply click a **Re-run** button or **Re-run** in an [Action menu](#), as with other tasks.

The **Restartable Job Steps** tab in the z/OS Task Instance Details provides a list of all job steps in the task and indicates from which steps you can start the re-run.

When you re-run a z/OS task, the Controller automatically performs the following:

- Deletes data sets that were created in dependent steps.
- Maintains Generation data group.



### Note

You must re-run a z/OS task from the Universal Controller user interface in order for these clean-up procedures to be performed. Do not re-run the task from the z/OS prompt.

## Confirming JCL Changes

If you make any JCL changes, the Controller will prompt you for a confirmation, as described in the procedures below.

### Re-run a z/OS Task from a Specific Step

**Step 1** On the [Activity Monitor](#), click the Details icon next to the **Instance Name** of the task you want to re-run. The z/OS Task Instance Details displays.

**Step 2** Click the **Restartable Job Steps** tab to display a list of all job steps in the task.

Step Number	Restartable	Selected for Re-run	Depends On	Step	Procedure	Program	Step Code	Failed	Updated By	Updated
1	Yes	No	N/A	OPSTP00		UAGRERUN	0000	No	ops.system	2016-04-25 17:42:26 -0400
2	Yes	No	N/A	S1		IEBGENER	0000	No	ops.system	2016-04-25 17:42:26 -0400
3	Yes	No	N/A	S2		IEBGENER	0000	No	ops.system	2016-04-25 17:42:26 -0400
4	Yes	No	N/A	S3		IEBGENER	0000	No	ops.system	2016-04-25 17:42:26 -0400
5	Yes	No	N/A	S4		IEBGENER	0000	No	ops.system	2016-04-25 17:42:26 -0400
6	Yes	No	N/A	S5		IEBGENER	0000	No	ops.system	2016-04-25 17:42:26 -0400
7	Yes	No	N/A	S6		IEBGENER	0000	No	ops.system	2016-04-25 10:51:35 -0400
8	Yes	No	N/A	S6C		ISRSUPC	0000	No	ops.admin	2016-04-26 10:51:44 -0400

Check the **Restartable** column to see from which steps you can start the re-run (Yes or No).

If applicable, the **Failed** column indicates at which step(s) the task failed.

**Step 3** Assuming any failures were caused by error(s) in the JCL, examine the JCL and make your corrections. The Controller uses a background process to determine whether changes have been made to the JCL. Any changes trigger a confirmation process.

**Step 4** Click the Details icon next to the **Step Number** of any step to see detail information about that step.

**Restartable Job Step Details**

Update Select for Re-run Refresh Close

Restartable Job Step

Details

Task Instance: stonebranch-zOStask-01 Attempt: 1

Step Number: 3

Restartable:  Selected for Re-run:

Step: J20

Procedure:

Program: WMSSETRC

Step Code: 0016

Failed:

Depends On: N/A

IO Reads: 0 CPU Time: 0

IO Writes: 0 Memory Used: 0

IO Other: 13 Memory Peak: 252

IO Total: 13

Update Select for Re-run Refresh Close

**Step 5** From the Restartable Job Steps list, select the steps that you want included in the re-run:

1. Click the first step that you want included in the re-run.
2. Press and hold the <Shift> key.
3. Click the last step that you want included in the re-run.
4. Right-click any step in the selected group to display an [Action menu](#).
5. Click **Select for Re-run**.

(You also can right-click a step and select **Select to End for Re-run** to include that selected step and all following steps in the re-run.)

If you want to de-select a job step in the group for inclusion in the re-run, right-click the step and, in the [Action menu](#), click **Deselect for Re-run**.

Step Number	Restartable	Selected for Re-run	Depends On	Step	Procedure	Program	Step Code	Failed	Updated By	Updated
1	Yes	No	N/A	OPSTP00	UAGRERUN	0000	0000	No	ops.system	2016-04-25 17:42:26 -0400
2	Yes	No	N/A	S1	EBGENER	0000	0000	No	ops.system	2016-04-25 17:42:26 -0400
3	Yes	No	N/A	S2	EBGENER	0000	0000	No	ops.system	2016-04-25 17:42:26 -0400
4	Yes	No	N/A	S3	EBGENER	0000	0000	No	ops.system	2016-04-25 17:42:26 -0400
5	Yes	No	N/A	S4	EBGENER	0000	0000	No	ops.system	2016-04-25 17:42:26 -0400
6	Yes	No	N/A	S5	EBGENER	0000	0000	No	ops.system	2016-04-25 17:42:26 -0400
7	Yes	Yes	N/A	S6	EBGENER	0000	0000	No	ops.admin	2016-04-26 10:54:32 -0400
8	Yes	Yes	N/A	S6C	IRSUPC	0000	0000	No	ops.admin	2016-04-26 10:54:38 -0400

**Step 6** Click the **z/OS Task Instance** tab to redisplay the z/OS Task Instance Details.

**Step 7** Click the **Re-run** button to re-run the task for the selected job steps.

**Step 8** If you have made changes to the JCL, the task instance goes into a status of **Confirmation Required** on the Activity Monitor.

To confirm the changes:

1. From the Activity Monitor, [open](#) the task instance.
2. Click the **Confirm JCL Changes** tab to display a list of all changes that were made to the JCL:

Job Id	Step Number	Error Message	Old Data	New Data	Confirmed	Updated By	Updated
JOB08060	2	DSN does not match DD=SYSUT1	DSN=QA.TEST.OPSWISE.CNTX DD=SYSUT1	DSN=QA.TEST.OPSWISE.CNTL	No	ops.system	2014-08-08 12:26:36
JOB08060	3	DSN does not match DD=SYSUT1	DSN=QA.TEST.OPSWISE.JCLA DD=SYSUT1	DSN=QA.TEST.OPSWISE.CNTL	No	ops.system	2014-08-08 12:26:36

3. Click the **Confirm** button at the top of the list.
4. Click the **z/OS Task Instance** tab. The **JCL Changes Confirmed** field and then click the **Re-run** button.

**Step 9** After the re-run is complete, the **Failed** column in the **Restartable Job Steps** list should show **No** for each step.



**Note**

If you repeat the above process on the same task instance, the previous list of JCL changes, if any, is replaced with the most recent list of changes.

### Restartable Job Steps List Column Descriptions

The following table describes each column on the z/OS Restartable Job Steps list.

Column Name	Description
Step Number	Number assigned to this step by the Controller.
Restartable	If the JCL job fails, the Controller determines the latest step that you can restart from. Yes indicates that you can restart from this step.
Selected for Re-run	Indicates (Yes or No) whether or not this step has been selected for re-run (the Selected for Re-run field is enabled in the Restartable Job Steps Details).
Depends On	Specifies which other step(s), if any, must be completed successfully before you can run this step.
Step	Name of the JCL step (extracted from the JCL).
Procedure	Procedure step name from within the JCL step.
Program	Name of the program being executed by the step.
Step Code	Extracted from the JCL. Exit code for this step of the program.
Failed	Indicates (Yes or No) whether or not this step failed.
Updated	Name of the user that last updated this step.
Updated	Date and time that this step was last updated.

### Confirm JCL Changes Tab Column Descriptions

The following table describes each column on the Z/OS Restartable Job Steps list.

Column Name	Description
Jobid	Number assigned to this step by the Controller.
Step#	JCL step number that was modified.
Error message	Description of the change.
Old Data	JCL before the change.
New Data	JCL after the change.

### Interactively Ignoring a Step Code to Complete a Task

If the exit code on a previous step is causing a step failure, but you still want to finish the job, you can change the exit code in order to complete the task.

<b>Step 1</b>	From the Activity Monitor, <a href="#">open</a> the task instance.
---------------	--



**Step 2** From the **Restartable Steps** tab, click on the step whose exit code you want to change. The Restartable Job Step Details for this job step displays:

**Step 3** Enter the new code in the **Step Code** field and click **Update**.

**Step 4** Click the **z/OS Task Instance** tab and then click the **Re-run** button.

## CA7/CA11 Toleration

### Non-Restartable Customized Job Steps

The Controller can read and interpret JCL step names that have been customized for CA11 and UCC. This allows you to launch your existing CA11 and UCC jobs from the Controller without modifying the JCL.

When the Controller encounters one of the following step names in your JCL, the Controller will skip the step during a restart:

- CA11NR - CA11 Non-Restartable
- UCC11NR - UCC11 Non-Restartable
- OPSNR000 - Opwise Non-Restartable

In the following example, step 3 has one of the above DD Names and therefore is a non-restartable step.

Step Number	Restartable	Selected for Re-run	Depends On	Step	Procedure	Program	Step Code	Failed	Updated By	Updated
1	Yes	No	N/A	OPSTP00		UAGRERUN	0000	No	ops.system	2016-04-25 17:42:26 -0400
2	Yes	No	N/A	S1		IEBGENER	0000	No	ops.system	2016-04-25 17:42:26 -0400
3	No	No	N/A	S2		IEBGENER	0000	No	ops.system	2016-04-25 17:42:26 -0400
4	Yes	No	N/A	S3		IEBGENER	0000	No	ops.system	2016-04-25 17:42:26 -0400
5	Yes	No	N/A	S4		IEBGENER	0000	No	ops.system	2016-04-25 17:42:26 -0400
6	Yes	No	N/A	S5		IEBGENER	0000	No	ops.system	2016-04-25 17:42:26 -0400
7	Yes	No	N/A	S6		IEBGENER	0000	No	ops.admin	2016-04-26 10:51:35 -0400
8	Yes	No	N/A	S6C		ISRSUPC	0000	No	ops.admin	2016-04-26 10:51:44 -0400

## SCHID - Overriding the CA7 Schedule ID

The Schedule ID field in the z/OS Task Details allows you to override the CA7 SCHID (Schedule ID).

For example, the JCL shown below contains CA7 Scheduled Overrides statements #JI and #JEND. This JCL will set CLASS =A if the SCHID is between 1 thru 39, and set CLASS=B if the SCHID is between 40 thru 79. The user can set the SCHID by entering it into the Schedule ID field. The Agent scans for #JI and #JEND, and generates the appropriate JCL, as shown in the following example.

```
//SCHID JOB (IMS,001),JIM,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&SYSUID,
#JI, ID=1-39
//          CLASS=A
#JEND
#JI, ID=40-79
//          CLASS=B
#JEND
//S1      EXEC PGM=IGWSPZAP
//SYSLIB  DD DSN=OPS01.JS01.LOAD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN   DD *
DUMPT WMSSETRC WMSSETRC
/*
//
```

## Non-Restartable Job Steps

A z/OS Agent determines that a job step is non-restartable if the step contains any of the following:

- One of the special DDNAMEs: CA11NR, UCC11NR, or OPSNR000.
- DD statement with DISP=(NEW,PASS) or (OLD,DELETE). (Note that the third DISP value is not considered by the agent.)
- A backwards volume reference. For example: VOL=REF=...

## Viewing Re-run Reports

The Controller keeps a detailed record of task re-runs. This data is written to the **Output** tab on the task instance record, as shown in the sample below:



Audit Details
Close

Audit
Child Audits

Details

Audit Type : <input type="text" value="Command"/>	Table Name : <input type="text" value="ops_exec_zos"/>
Audit Date : <input type="text" value="2014-06-10 21:33:14 -0400"/>	Table Key : <input type="text" value="bd4ffaff67764337af85c59efa0d5349"/>
Source : <input type="text" value="User Interface"/>	Parent Audit : <input type="text" value=""/>
Created : <input type="text" value="2014-06-10 21:33:14 -0400"/>	Created By : <input type="text" value="ellen.ulrich"/>
Status : <input type="text" value="Command Success: Command Re-run executed successfully against task instance 'zos-task-launch-rerun-with-gdg'."/>	
Description : <input type="text" value="Executing Command: RE-RUN on zos-task-launch-rerun-with-gdg (1)"/>	
Before : <pre>ExecZosBean [ {abend_step=null} {acctinfo=null} {acquired_agent=} {acquired_agent_cluster=null} (agent=1397156709115.192872b15b6d42c1a788cdd4c30d2c60) {agent_cluster=null} {agent_cluster_var_check=false} {agent_id=1397156709115.192872b15b6d42c1a788cdd4c30d2c60} {agent_var=null} {agent_var_check=false} {all_dependencies_cleared=false} {attempt_count=2} {auto_restart_option=- None -&gt;} {avg_estimated_end=2014-06-10 21:31:46 -0400} {calendar=77171434c0a801c9015d5b2b5d17ddee} {cpu_time=0} {credentials=null} {credentials_var_check=false} {duration=null} {duration_seconds=null} {early_finish=false} {ef_duration=null} {ef_enabled=false} {ef_time=00:00} {ef_type=TIME} {end_time=2014-06-10 21:31:48 -0400} {error_desc=null} {exclusive_state=Initial} {execution_user=ellen.ulrich} {exit_code=JCLERR} {exit_code_output=null} {exit_code_processing=Success Exitcode Range} {exit_code_text=null} {exit_codes=0} {forced=false} {high_estimated_end=null} {hold_resources=false} {invoked_by=Manually Launched} {io_other=0} {io_reads=0} {io_writes=0} {jcd=null} {jcd_location=QA.TEST.OPSWISE.CNTL(GDGTST4)} {job_id=JOB01642} {job_name=TESTGDG4} {jobclass_new=null} {jobname_new=null} {late_finish=false} {late_start=false} {launch_time=2014-06-10 21:24:50 -0400} {if_duration=null} {if_enabled=false} {if_time=00:00} {if_type=TIME} {low_estimated_end=null} {ls_duration=null} {ls_enabled=false} {ls_time=00:00} {ls_type=TIME} {memory_peak=0} {memory_used=0} {msgclass_new=null} {name=zos-task-launch-rerun-with-gdg} {opswise_groups=null} {output_return_file=null} {output_return_nline=100} {output_return_sline=1} {output_return_text=null} {output_return_type=JOBLOG} {output_type=STDOUT} {parameters=null} {parameters_list=null} {priority=MEDIUM} {proclib_name=null} {queued_time=2014-06-10 21:31:46 -0400} {res_priority=10} {res_state=Initial} {resources_consumed=true} {restart_available=false} {restart_command=false} {restart_files=null} {restart_force=false} {restart_jcd=null} {restart_step_name=null} {restart_step_num=null} {restart_steps=null} {retry_counter=0} {retry_indefinitely=false} {retry_interval=60} {retry_maximum=0} {run_called=true} {run_criteria_ft=false} {run_criteria_tt=false} {schedule_id=null} {security_name=zos-task-launch-rerun-with-gdg} {start_held=false} {start_held_reason=null} {start_time=2014-06-10 21:31:46 -0400} {state_changed_time=2014-06-10 21:31:48 -0400} {status_code=FAILED} {status_description=IEF452I TESTGDG4 - JOB NOT RUN - JCL ERROR } {summary=manual Launch task Re-run step02.SYSUT1 should have the same gdg as the previous run.} {sys_class_name=ops_exec_zos} {sys_created_by=ellen.ulrich} {sys_created_on=2014-06-10 21:24:50 -0400} {sys_id=bd4ffaff67764337af85c59efa0d5349} {sys_updated_by=ops.system} {sys_updated_on=2014-06-10 21:31:48 -0400} {task_id=3e91d3d91c9e4030bbeb49e764249ce5} {task_ref_count=1} {trigger_id=null} {type=z/OS} {user_estimated_end=null} {vertex_id=null} {wait_for_exclusive=false} {wait_for_resources=false} {wf_progress=null} {workflow_definition_id=null} {workflow_id=null} {workflow_start_time=null} {zosid=00000075} ]</pre>	
After : <input type="text" value=""/>	
Difference : <input type="text" value=""/>	
Additional Information : <input type="text" value=""/>	

## Creating Step Conditions

- [Overview](#)
  - [Runtime Monitoring](#)
- [Creating a Step Condition](#)
- [Step Condition Details Field Descriptions](#)
- [Step Condition Logic](#)
- [Example Steps and Condition Codes](#)
  - [Example Job and Procedure](#)
  - [User Interface Specifications and Actions](#)

### Overview

A z/OS JES batch job consists of one or more steps defined by JCL EXEC statements. The JCL EXEC statement identifies the program that the step is to execute. During job execution, steps are executed sequentially under conditions defined by the JCL statements. When a step completes execution, a Step Condition code is recorded by JES. The Step Condition code is either an integer condition code, in the range of 0 - 4095, or an ABEND code. If a step does not execute, which can be for a number of reasons, it is referred to as FLUSH'ed.

A task's status of SUCCESS or FAILED is determined by task exit code processing. The z/OS Task Details [Exit Code Processing](#) field specifies the method used to determine the task status for a z/OS batch job. When the **Step Conditions** method is selected, the task status of the z/OS batch job is controlled by the Step Conditions defined in the z/OS Task and parent workflow.

In addition to determining the z/OS Task status, Step Conditions provide a means to control the execution of job steps without any changes to the batch job JCL. A Step Condition definition can specify that job execution is halted, continued, or determined by a console operator. For example, if a multi-step job has a step that ends with a condition code of 8, you could include a Step Condition check to decide whether or not to run the following steps.

Step Conditions can be applied at the z/OS Task level or at the [workflow](#) level that apply to all z/OS tasks in that workflow and sub-workflows.



#### Note

If Step Conditions has been selected for Exit Code Processing, and you then select a different option, a confirmation pop-up displays to warn that any defined Step Conditions will be removed.

### Runtime Monitoring

You can monitor Step Conditions at run time via the [Activity Monitor](#), which lets you add or change Step Conditions for a single task instance and then re-run that job.

### Creating a Step Condition

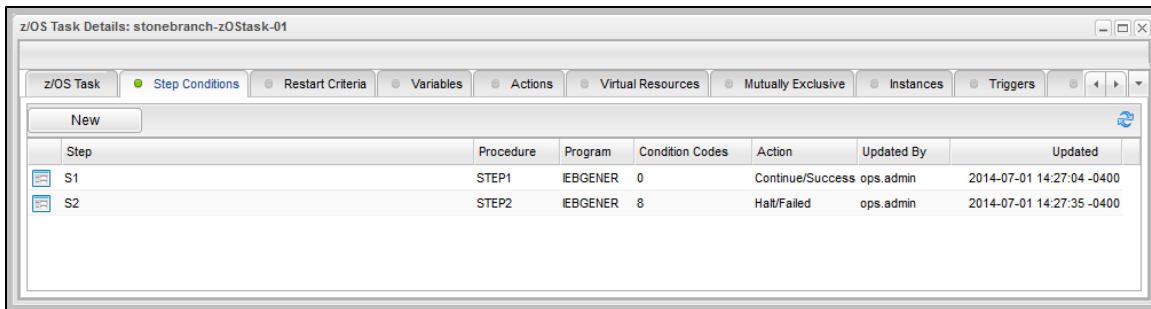
**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > z/OS Tasks**. The z/OS Tasks list displays.

**Step 2** Select the task for which you want to create one or more Step Conditions. The z/OS Task Details for that task displays.

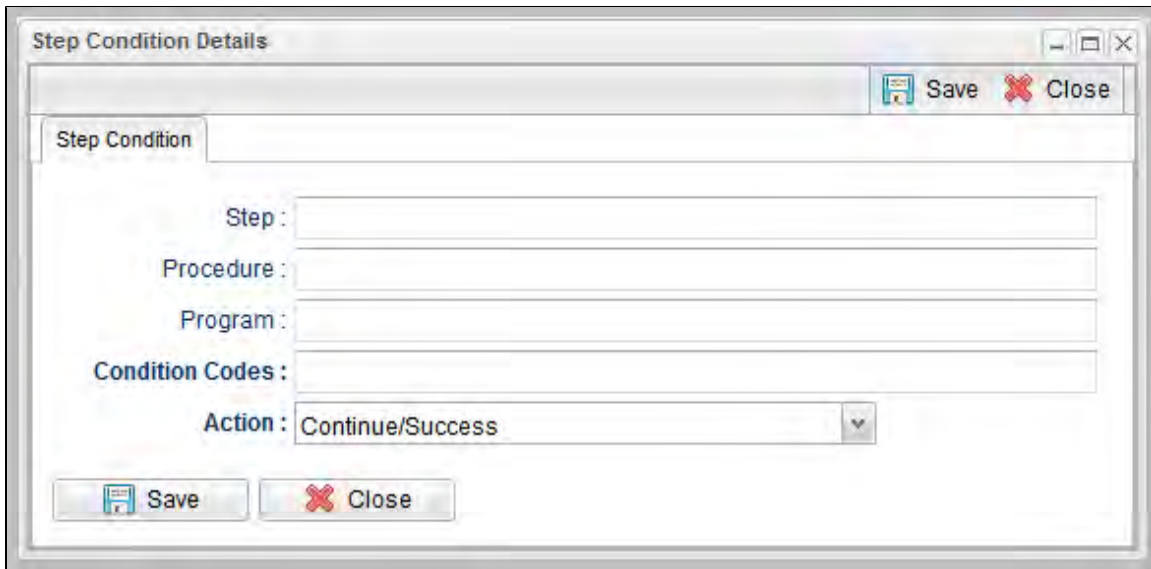
The screenshot shows the 'z/OS Task Details: stonebranch-zOSTask-01' window. The 'General' section includes fields for Task Name (stonebranch-zOSTask-01), Version (7), Task Description, Member of Business Services, Hold on Start, Virtual Resource Priority (10), and Hold Resources on Failure. The 'z/OS Details' section includes Agent (QAZOS111 - AGNT0002), Agent Variable, Credentials, JCL Location (C), Use JCL Override Library, New Jobname, Procedure Library, New Jobclass, Schedule Id, New Msgclass, and a Parameters table (currently empty). The 'Exit Code Processing' field is set to 'Step Conditions'. The 'Retry Options' section includes Auto-Restart Option (Use Restart Criteria), Maximum Retries (0), Retry Interval (60), and Retry Indefinitely. The 'Wait/Delay Options' section includes Wait To Start, Delay On Start, and Workflow Only. The 'Time Options' section includes Late Start, Late Finish, Early Finish, and User Estimated Duration (Day, Hour, Min, Sec).

**Step 3** In the Exit Code Processing field, select **Step Conditions** from the drop-down list and then click the **Update** button.

**Step 4** Click the **Step Conditions** tab. The Step Conditions list displays a list of any currently defined Step Conditions for this task.



**Step 5** Click **New**. The Step Condition Details pop-up dialog displays.



**Step 6** Using the [field descriptions](#), below, as a guide, complete the fields as needed.

**Step 7** Click the **Save** button, or right-click in the Details and then click **Save**, to save the record and return to the Step Conditions List.

**Step 8** If appropriate, repeat these steps for any additional Step Conditions you want to add.

## Step Condition Details Field Descriptions

The table below describes the fields and buttons in the Step Conditions Details pop-up dialog.

Field Name	Description
Step	Job step name to match. A blank value or an asterisk (*) will match any job step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Procedure	Procedure step name to match. A blank value or an asterisk (*) will match any procedure step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Program	Program name to match. A blank value or an asterisk (*) will match any program name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Condition Codes	Conditions codes are integer return codes from the program or ABEND codes. Integer return codes are specified as a comma-separated list of integer values or ranges. Ranges are specified with a dash (-) separating the lower and upper bounds of the range. The z/OS job step return code range is 0-4095. ABEND codes are specified directly as either a user ABEND or a system ABEND. The ABEND code must be specified verbatim including leading zeroes.  For example: 1,6-4095,Sxxx,Unnnn,JCLERR
Action	Action to take and the task status to set if the Step Condition matches. See <a href="#">Step Condition Logic</a> , below, for an explanation of the actions.

<b>Buttons</b>	This section identifies the buttons displayed above and below the Step Condition Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update button</b>	Saves updates to the record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Delete button</b>	Deletes the current record.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.

## Step Condition Logic

Step Condition exit code processing starts the task with a task status of SUCCESS. As the job executes and steps complete, the task status can change from SUCCESS to FAILED based on Step Condition definitions and job execution conditions. Once a task status has been changed to FAILED, it cannot be changed back to SUCCESS.



### Note

The Controller searches Step Condition definitions based on their order in the [Step Conditions list](#); the definition at the top of the list is searched first. To change the order of the definitions in the list, drag and drop them to any location.

In addition to Step Condition definitions changing the task status, the following specific job execution conditions will change the task status:

- JCL errors (for example, IEF4521 or IEF4531) change the task status to FAILED.
- A job step ABEND that does not match any Step Condition definition changes the task status to FAILED.

As job steps complete execution, Universal Controller searches the list of task-level Step Condition definitions that matches the current step based on the job step name, procedure step name, program name, and the Step Condition code. The search stops when the first definition is found. If a matching Step Condition is found, the Step Condition action is taken. If no matching task-level Step Condition is found, the search continues with the parent workflow-level Step Conditions. If no matching workflow-level Step Condition is found, the search continues with its parent workflow-level Step Conditions and so on until a match is found or all Step Conditions have been search in the hierarchy. If no matching Step Condition is found, the Controller takes no action and normal JES processing of the job continues.



### Note

If a step does not execute, no search is performed for that step in the Step Condition definitions. For example, if a job step FLUSH'es due to a JCL IF statement, the Step Conditions will not be search for the step.

The Step Condition definition action value specifies two attributes, the action to take and the task status. These two attributes are combined into combinations that form the possible action values. The following Step Condition actions are supported:

<b>Continue/Success</b>	Job execution continues and task status is set to SUCCESS.
<b>Continue/Failed</b>	Job execution continues and task status is set to FAILED.
<b>Halt/Failed</b>	Job execution is halted at the current step and task status is set to FAILED.
<b>Asker</b>	Job execution is stopped and the Controller sends a WTOR message to the console operator requesting a reply on how job execution should proceed. The action is dependent upon the operator reply (see <a href="#">Example 4</a> , below).

During job processing, the Controller issues message UAG1059A to the job log when it matches a Step Condition definition to a step that has completed execution. Message UAG1059A includes the Step Condition definition values including the action that is taken. The message provides an audit record of Step Condition processing that has influenced job execution.

## Example Steps and Condition Codes

This section provides a sample job and PROC, followed by example condition code checks for that job.



## Example Job and Procedure

### Example Job

```
//JOBA JOB ...
//S1 EXEC ACCTBL10
```

### Example Procedure (Cataloged Procedure)

```
//ACCTBL10 PROC
//STEP1 EXEC PGM=BALANCE
//STEP2 EXEC PGM=MERGE
//STEP3 EXEC PGM=IEBGENER
// PEND
```

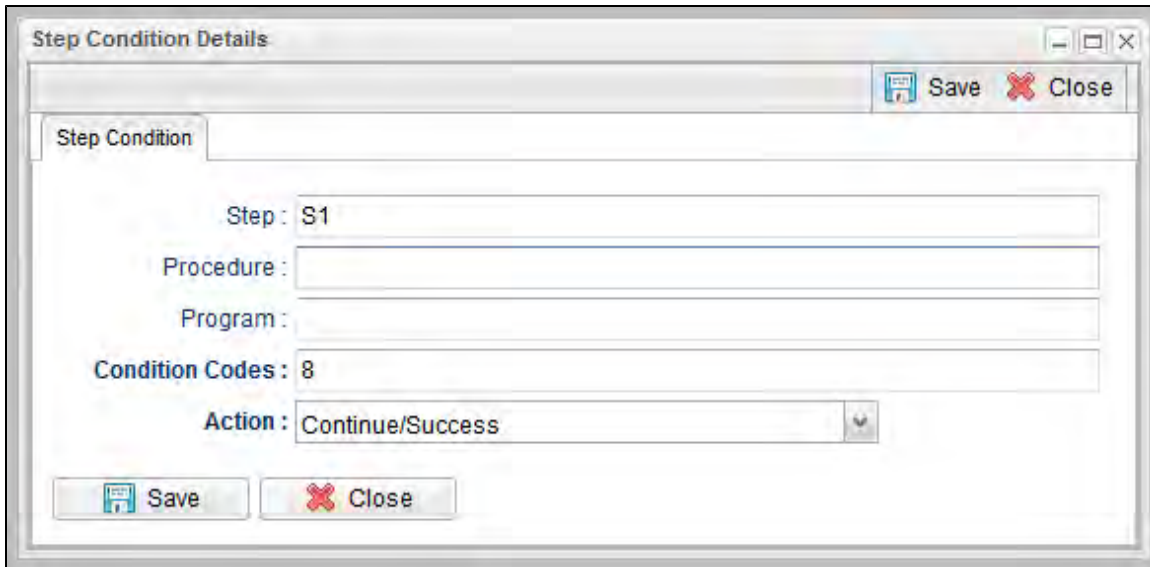
## User Interface Specifications and Actions

The following examples specify condition code checks for the example job above.

### Example 1

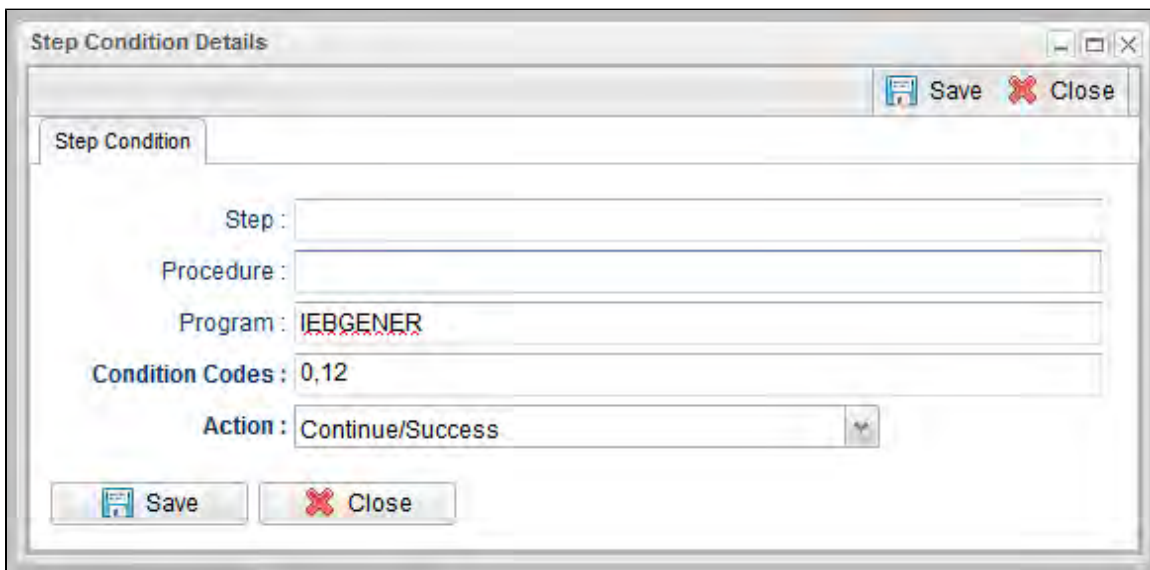
In this example, if the condition code of any step of the job is greater than 12, the job halts and the task status is set to FAILED.

### Example 2



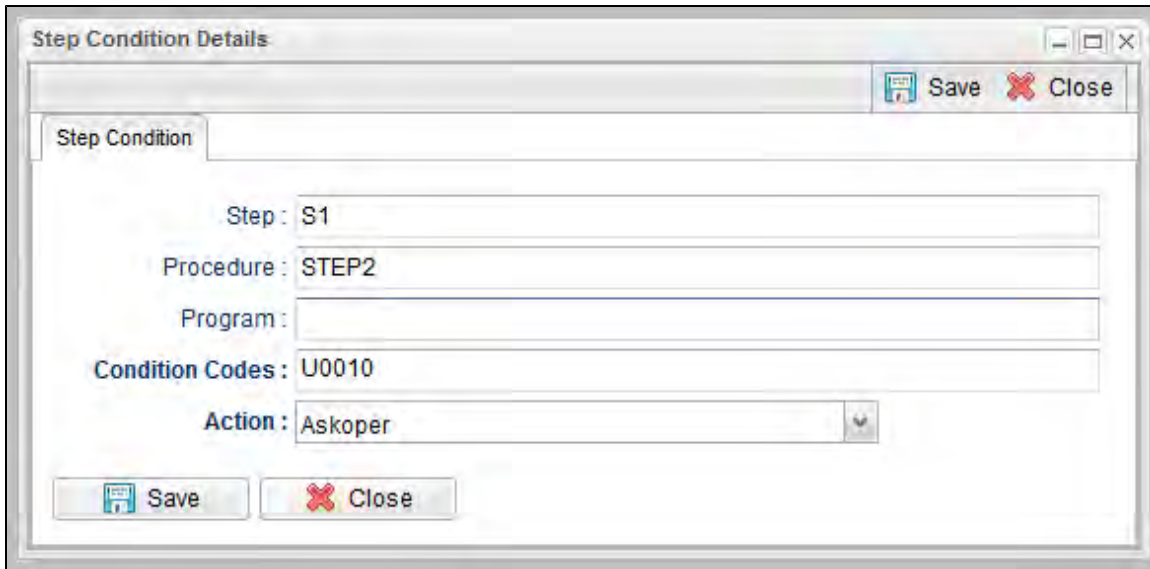
In this example, if the condition code of any procedure step executed as job step S1 is equal to 8, the job continues and the task status is set to SUCCESS.

**Example 3**



In this example, if the condition code of program IEBGENER is 0 or 12, the job continues and the task status is set to SUCCESS.

**Example 4**



In this example, if the condition code from job step S1, procedure step STEP2 is user ABEND U0010, the operator is alerted with a WTOR console message that specifies the job name, the job step, the procedure step, and the actual condition code. The Controller will take the action specified by the operator reply.

**Issued WTOR**

```
UAG1058A JOBA      ,S1      ,STEP2  ,Code: U0010 Reply 1:CONT/SUCCESS, 2:CONT/FAIL, 3:HALT/FAIL
```

The UAG1058A WTOR message identifies the job name as JOBA, step name as S1, procedure step name as STEP2, and the Step Condition code as U0010 that matched the Step Condition definition which resulted in the ASKOPER action.

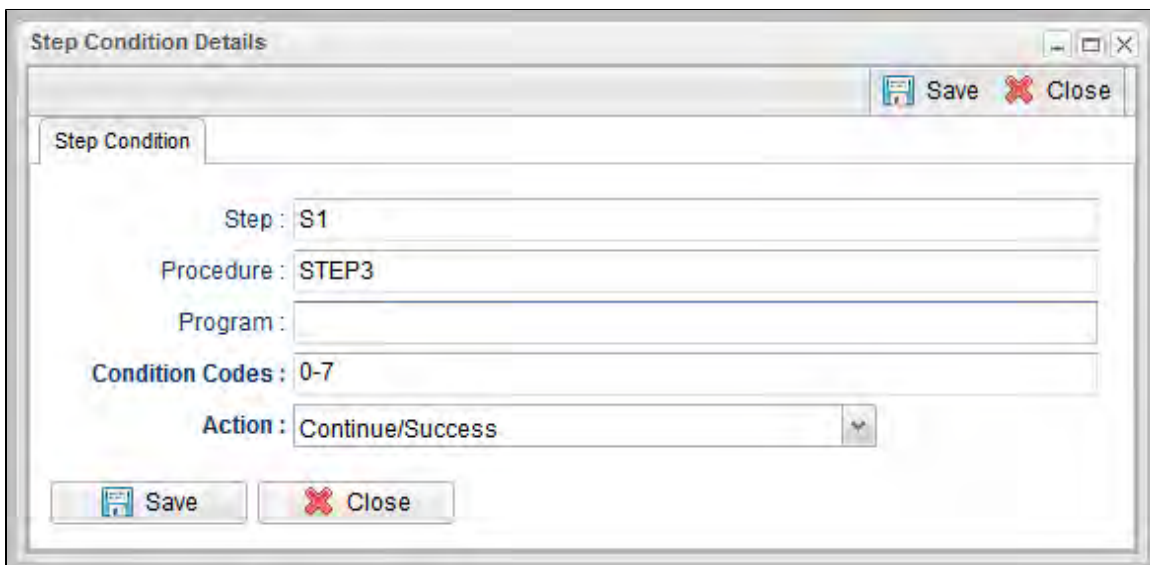
**Operator Reply**

The operator must reply with one of the following:

- (1) CONTINUE/SUCCESS
- (2) CONTINUE/FAILED
- (3) HALT/FAILED

(See [Step Condition Logic](#) for an explanation of these replies.)

**Example 5**



In this example, if the condition code from job step S1, procedure step STEP3 is within the range of 0-7, the job continues and the task status is set to SUCCESS.

**Example 6**

The screenshot shows a dialog box titled "Step Condition Details". It features a title bar with standard window controls (minimize, maximize, close) and two buttons: "Save" and "Close". Below the title bar is a tab labeled "Step Condition". The main content area contains several input fields: "Step : S1", "Procedure : STEP1", "Program :", and "Condition Codes : 1-4095". Below these fields is a dropdown menu labeled "Action : Continue/Failed". At the bottom of the dialog are two larger buttons: "Save" and "Close".

In this example, if the condition code from job step S1, procedure step STEP1 is greater than 0, the job continues and the task status is set to FAILED.

## Creating Step Actions

- [Overview](#)
- [Creating a Step Action](#)
- [System Operation Step Action Field Descriptions](#)

### Overview

You can specify actions to take on z/OS tasks in a Workflow based on [step condition codes](#) returned for any of the steps in that z/OS task.

**Note**

Currently, the only step action that you can take on z/OS tasks in a workflow is a System Operation.

Step actions can be defined only at the [Workflow](#) level. They apply to one, more, or all z/OS tasks in that immediate Workflow; they do not apply to any z/OS tasks in sub-workflows. (Every task in a Workflow has a unique Vertex ID, which is how you can tell one task from another if the Workflow has more than one of the exact same task.)

When you create a step action for a task in the Workflow, you specify the name of the task in the [Task](#) field. If there is more than one of those tasks in the Workflow, the Vertex Id drop-down list shows the Vertex Id for all tasks. So you can apply the step action to all tasks of that name in the Workflow or just the task with that Vertex Id.

In the Workflow Editor, when you right-click a task, there's a **View/Edit Run Criteria** selection for every task. For z/OS tasks, there's also a **View/Edit z/OS Step Actions** selection.

Every z/OS task is comprised of one or more steps. Each step in a z/OS task ends in a step condition code. System Operation step actions optionally let you send system notifications based on the outcome of each step action with options for None, Operation Failure, Operation Success/Failure, and Operation Success.

### Creating a Step Action

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > Workflow Tasks**. The Workflow Tasks list displays.

**Step 2** Select the Workflow for which you want to create one or more step actions. The Workflow Task Details for that Workflow displays.

Workflow Task Details: stonebranch-workflow-01

Update Launch Task View Parents Edit Workflow Copy Delete Refresh Close

Workflow Task Task Run Criteria Variables Actions Virtual Resources Mutually Exclusive Step Conditions Step Actions Instances

**General**

Task Name: stonebranch-workflow-01 Version: 24

Task Description:

Member of Business Services: stonebranchbusinessservice 01

Hold on Start:

Virtual Resource Priority: 10 Hold Resources on Failure:

**Workflow Details**

Show/Hide Skipped Tasks: Show Skipped

Default Calendar:

**Wait/Delay Options**

Wait To Start: -- None --

Delay On Start: -- None --

Workflow Only: -- System Default --

**Time Options**

Late Start:

Late Finish:

Early Finish:

User Estimated Duration: Day Hour Min Sec

Update Launch Task View Parents Edit Workflow Copy Delete Refresh Close

**Step 3** Click the **Step Actions** tab. The System Operation step actions list displays.

Workflow Task Details: stonebranch-workflow-01

Update Launch Task View Parents Edit Workflow Copy Delete Refresh Close

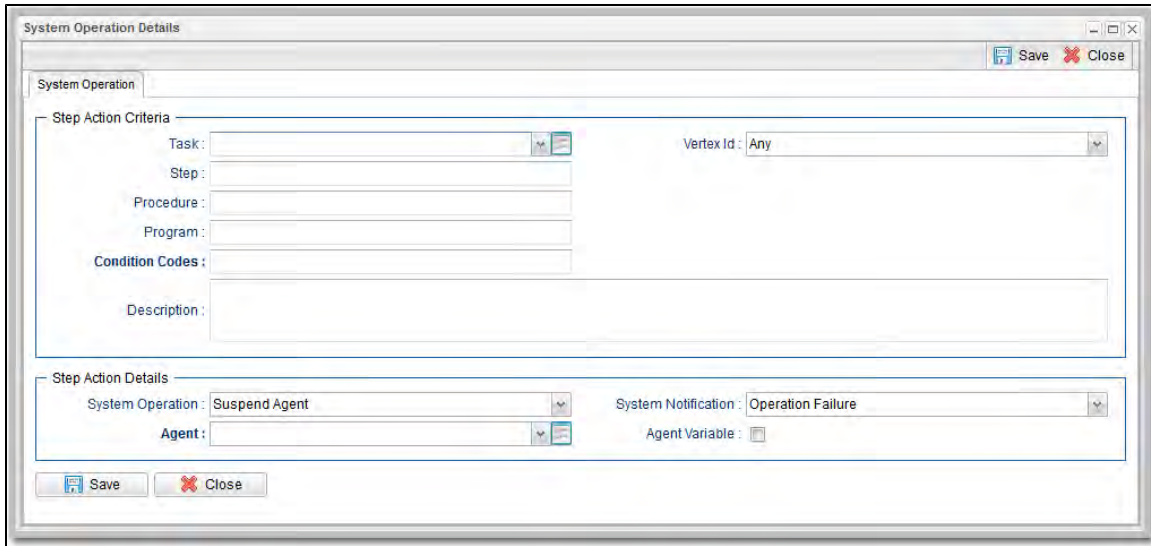
Workflow Task Task Run Criteria Variables Actions Virtual Resources Mutually Exclusive Step Conditions Step Actions Instances

System Operation

New

Type Details	Task Id	Vertex Id	Step Criteria	Description	Updated By	Updated
No items to show.						

**Step 4** Click **New**. The System Operation step actions pop-up dialog displays.



**Step 5** Using the field descriptions, below, as a guide, complete the fields as needed.


**Step 6** Click the **Save** button, or right-click in the Details and then click **Save**, to save the record and return to the Step Actions list.

**Step 7** If appropriate, repeat these steps for any additional step actions you want to add.


## System Operation Step Action Field Descriptions

The following table describes the fields and buttons in the System Operation Step Action Details.

Field Name	Description
<b>Step Action Criteria</b>	This section contains criteria for performing the step action.
Task	Name of a task. In combination with the <a href="#">Vertex Id</a> , it specifies a specific task within the Workflow to which the step action applies; if no task is specified, the step action applies to all z/OS tasks within the Workflow.
Vertex Id	Numerical ID of the task that identifies it uniquely from other tasks of the same type in the Workflow. In combination with the <a href="#">Task</a> , it specifies a specific task within the Workflow to which the step action applies.  Options: <ul style="list-style-type: none"> <li>• <b>Any</b> - The action applies to any instance of the specified task in the Workflow.</li> <li>• <b>&lt;number&gt;</b> - The action applies only to this instance of the task in the Workflow.</li> </ul>
Step	Job step name to match. A blank value or an asterisk (*) will match any job step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Procedure	Procedure step name to match. A blank value or an asterisk (*) will match any procedure step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Program	Program name to match. A blank value or an asterisk (*) will match any program name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Condition Codes	Conditions codes are integer return codes from the program or ABEND codes. Integer return codes are specified as a comma-separated list of integer values or ranges. Ranges are specified with a dash (-) separating the lower and upper bounds of the range. The z/OS job step return code range is 0-4095. ABEND codes are specified directly as either a user ABEND or a system ABEND. The ABEND code must be specified verbatim including leading zeroes.
Description	Description of this System Operation Step Action.
<b>Step Action Details</b>	This section contains assorted detailed information about the step action.

System Operation	<p>Specific system operation to perform.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Suspend Agent</li> <li>• Resume Agent</li> <li>• Suspend Agent Cluster</li> <li>• Resume Agent Cluster</li> <li>• Suspend Cluster Membership</li> <li>• Resume Cluster Membership</li> <li>• Set Agent Task Execution Limit</li> <li>• Set Cluster Task Execution Limit</li> <li>• Set Virtual Resource Limit</li> <li>• Run Task Instance Command</li> </ul>
System Notification	<p>Status of the specified <a href="#">system operation</a> that will trigger a system notification.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• Operation Failure (default)</li> <li>• Operation Success/Failure</li> <li>• Operation Success</li> </ul> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b> The Controller must be <a href="#">configured for system notifications</a> in order for system notifications to be triggered.</p> </div>
Agent	<p>If <a href="#">System Operation</a> is <b>Suspend Agent, Resume Agent, Suspend Cluster Membership, Resume Cluster Membership, or Set Agent Task Execution Limit</b>; Agent for which the system operation is to be performed.</p>
Agent Variable	<p>If <a href="#">System Operation</a> is <b>Suspend Agent, Resume Agent, Suspend Cluster Membership, Resume Cluster Membership, or Set Agent Task Execution Limit</b>; Indication of whether the <b>Agent</b> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <b>Agent</b> as a variable (checked).</p>
Agent Cluster	<p>If <a href="#">System Operation</a> is <b>Suspend Agent Cluster, Resume Agent Cluster, Suspend Cluster Membership, Resume Cluster Membership, or Set Cluster Task Execution Limit</b>; Agent Cluster for which the system operation is to be performed.</p>
Agent Cluster Variable	<p>If <a href="#">System Operation</a> is <b>Suspend Agent Cluster, Resume Agent Cluster, Suspend Cluster Membership, Resume Cluster Membership, or Set Cluster Task Execution Limit</b>; Indication of whether the <b>Agent Cluster</b> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <b>Agent Cluster</b> as a variable (checked).</p>
Task Execution Limit	<p>If <a href="#">System Operation</a> is <b>Set Agent Task Execution Limit</b> or <b>Set Cluster Task Execution Limit</b>; Specification for whether a Limited or Unlimited number of task instances can be run concurrently on the specified Agent / Agent Cluster. (Default is Unlimited.)</p>
Virtual Resource	<p>If <a href="#">System Operation</a> is <b>Set Virtual Resource Limit</b>; Virtual resource for which a virtual resource limit is to be set.</p>
Virtual Resource Variable	<p>If <a href="#">System Operation</a> is <b>Set Virtual Resource Limit</b>; Indication of whether the <b>Virtual Resource</b> field is a reference field for selecting a specific <a href="#">Virtual Resource</a> (unchecked) or a text field for specifying the <b>Virtual Resource</b> as a variable (checked).</p>
Limit	<p>If <a href="#">System Operation</a> is <b>Set Agent Task Execution Limit</b> or <b>Set Cluster Task Execution Limit</b>, and <a href="#">Task Execution Limit</a> is <b>Limited</b>; Number of tasks that can be run concurrently by the specified Agent / Agent Cluster.</p> <p>If <a href="#">System Operation</a> is <b>Set Virtual Resource Limit</b>; Virtual resource limit to be set for the specified virtual resource.</p>



Command	<p>If <a href="#">System Operation</a> is <b>Run Task Instance Command</b>; Type of task instance command to run.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Cancel</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Force Finish/Cancel</li> <li>• Force Finish/Cancel (Halt)</li> <li>• Skip</li> <li>• Unskip</li> <li>• Hold</li> <li>• Release</li> <li>• Release Recursive</li> <li>• Clear All Dependencies</li> <li>• Clear Exclusive</li> <li>• Clear Predecessors</li> <li>• Clear Resources</li> <li>• Clear Timewait</li> </ul>
Instance Lookup Option	<p>If <a href="#">System Operation</a> is <b>Run Task Instance Command</b>; Specification for how to search for the task instance to run a command against.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Instance Name</li> <li>• Instance Name/Task</li> <li>• Instance Id</li> <li>• Task</li> </ul>
Instance Name	<p>If <a href="#">Instance Lookup Option</a> is <b>Instance Name</b> or <b>Instance Name/Task</b>; Name of the task instance to run the command against.</p>
Instance Criteria	<p>If <a href="#">Instance Lookup Option</a> is <b>Instance Name</b>, <b>Instance Name/Task</b>, or <b>Task</b>; Additional criteria for selecting a specific task instance if multiple task instances have matching names.</p> <ul style="list-style-type: none"> <li>• Newest Active Instance</li> <li>• Oldest Active Instance</li> <li>• Newest Instance</li> <li>• Oldest Instance</li> </ul> <p>(An Active task instance is an instance that is not in any of these statuses: Skipped, Finished, Success.)</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b> An Unskip command can use only the Newest Instance and Oldest Instance criteria; an active instance cannot be unskipped.</p> </div>
Task Reference	<p>If <a href="#">Instance Lookup Option</a> is <b>Instance Name/Task</b> or <b>Task</b>; Name of the task for which the task instance was run.</p>
Task Reference Variable	<p>If <a href="#">Instance Lookup Option</a> is <b>Instance Name/Task</b> or <b>Task</b>; Indication of whether the <b>Task Reference</b> field is a reference field for selecting a specific Task (unchecked) or is a text field for specifying the task as a variable (checked). For a variable, use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p>
Instance ID	<p>If <a href="#">Instance Lookup Option</a> is <b>Instance ID</b>; ID of task instance to run the command against. The instance ID (sysid) is a 32-character universally unique identifier. You can use the <code>\${ops_task_id}</code> variable or <code>\${_siblingid('mytask')}</code> function to get the instance id.</p>

<p>Workflow Instance Name Condition</p>	<p>If <a href="#">System Operation</a> is Run Task Instance Command; Optional. Type of condition for the name of the parent workflow task instance that contains the task on which to perform the specified action.</p> <p>The action will be performed only on a task instance in a parent workflow task instance meeting the specified condition value.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Equals</li> <li>• Starts With</li> <li>• Contains</li> <li>• Ends With</li> </ul> <p>For the selected condition (the default is Equals), a corresponding field displays (see below) that allows you to enter a value for that condition.</p>
<p>Workflow Instance Name Equals</p>	<p>If <a href="#">Workflow Instance Name Condition</a> = Equals; Exact name of a parent workflow task instance containing the task. <a href="#">Variables</a> are supported.</p>
<p>Workflow Instance Name Starts With</p>	<p>If <a href="#">Workflow Instance Name Condition</a> = Starts With; Character string at the start of the name of a parent workflow task instance containing the task. <a href="#">Variables</a> are supported.</p>
<p>Workflow Instance Name Contains</p>	<p>If <a href="#">Workflow Instance Name Condition</a> = Contains; Character string in the name of a parent workflow task instance containing the task. <a href="#">Variables</a> are supported.</p>
<p>Workflow Instance Name Ends With</p>	<p>If <a href="#">Workflow Instance Name Condition</a> = Ends With; Character string at the end of the name of a parent workflow task instance containing the task. <a href="#">Variables</a> are supported.</p>
<p><b>Buttons</b></p>	<p>This section identifies the buttons displayed above and below the Step Action Details that let you perform various actions.</p>
<p><b>Save</b></p>	<p>Saves the new System Operation Step Action Details.</p>
<p><b>Update</b></p>	<p>Saves updates to the record.</p>
<p><b>Refresh</b></p>	<p>Refreshes any dynamic data displayed in the Details.</p>
<p><b>Delete</b></p>	<p>Deletes the current record.</p>
<p><b>Close</b></p>	<p>For pop-up view only; closes the pop-up view of this task.</p>

## Creating Restart Criteria

- [Overview](#)
- [Creating Restart Criteria](#)
- [Restart Criteria Field Descriptions](#)
- [Restart Criteria Logic](#)
- [Restart Criteria Details - Directives](#)

### Overview

A z/OS JES batch job consists of one or more steps defined by JCL EXEC statements. The JCL EXEC statement identifies the program that the step is to execute. During job execution, steps are executed sequentially under conditions defined by the JCL statements.

When a task ends in a failed state, some or all of the job steps may need to be [re-run](#). The set of steps that should be re-run (if any) may vary depending on how and where the task failed. If the task is defined with [Auto-Restart Option = Use Restart Criteria](#), the Restart Criteria is used to select the appropriate steps to restart based on a particular failure scenario.



#### Note

If Use Restart Criteria has been selected for Auto-Restart Option, and you then select a different option, a confirmation pop-up displays to warn that any defined Restart Criteria will be removed.

### Creating Restart Criteria

**Step 1** From the Automation Center navigation pane, select **Tasks > z/OS Tasks**. The z/OS Tasks list displays.

**Step 2** Select the task for which you want to create one or more Restart Criteria. The z/OS Task Details for that task displays.

z/OS Task Details: stonebranch-zOSTask-01

Update Launch Task View Parents Copy Delete Refresh Close

z/OS Task Step Conditions Restart Criteria Variables Actions Virtual Resources Mutually Exclusive Instances Triggers

**General**

Task Name: stonebranch-zOSTask-01 Version: 8

Task Description: IF/THEN/ELSE. - \${city}

Member of Business Services: [dropdown]

Hold on Start:

Virtual Resource Priority: 10 Hold Resources on Failure:

**z/OS Details**

Agent: stonebranch-zOSAgent-01

Agent Variable:

Credentials: stonebranch-credential-01 Credentials Variable:

JCL Location: TESTCNTL(D237RC)

Use JCL Override Library:

New Jobname: [text] Procedure Library: [text]

New Jobclass: [text] Schedule Id: [text]

New Msgclass: [text]

Name	Value
*@CODE1	4
*@CODE2	8

Exit Code Processing: Success Exitcode Range

Exit Codes: 0-16

Automatic Output Retrieval: -- None --

**Retry Options**

Auto-Restart Option: -- None --

Maximum Retries: 0 Retry Indefinitely:

Retry Interval (Seconds): 60

**Wait/Delay Options**

Wait To Start: -- None --

Delay On Start: -- None --

Workflow Only: -- System Default --

**Time Options**

Late Start:

Late Finish:

Early Finish:

User Estimated Duration: [HH:MM:SS]

**Statistics**

First Time Ran: 2014-03-13 10:32:43 -0400 Lowest Instance Time: 0 Seconds

Last Time Ran: 2014-06-23 08:55:17 -0400 Average Instance Time: 1 Seconds

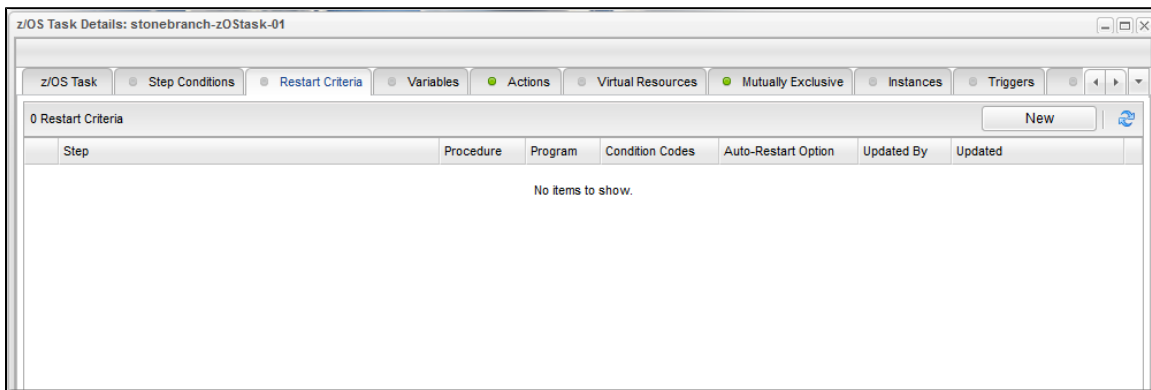
Last Instance Duration: 0 Seconds Highest Instance Time: 3 Seconds

Number of Instances: 23

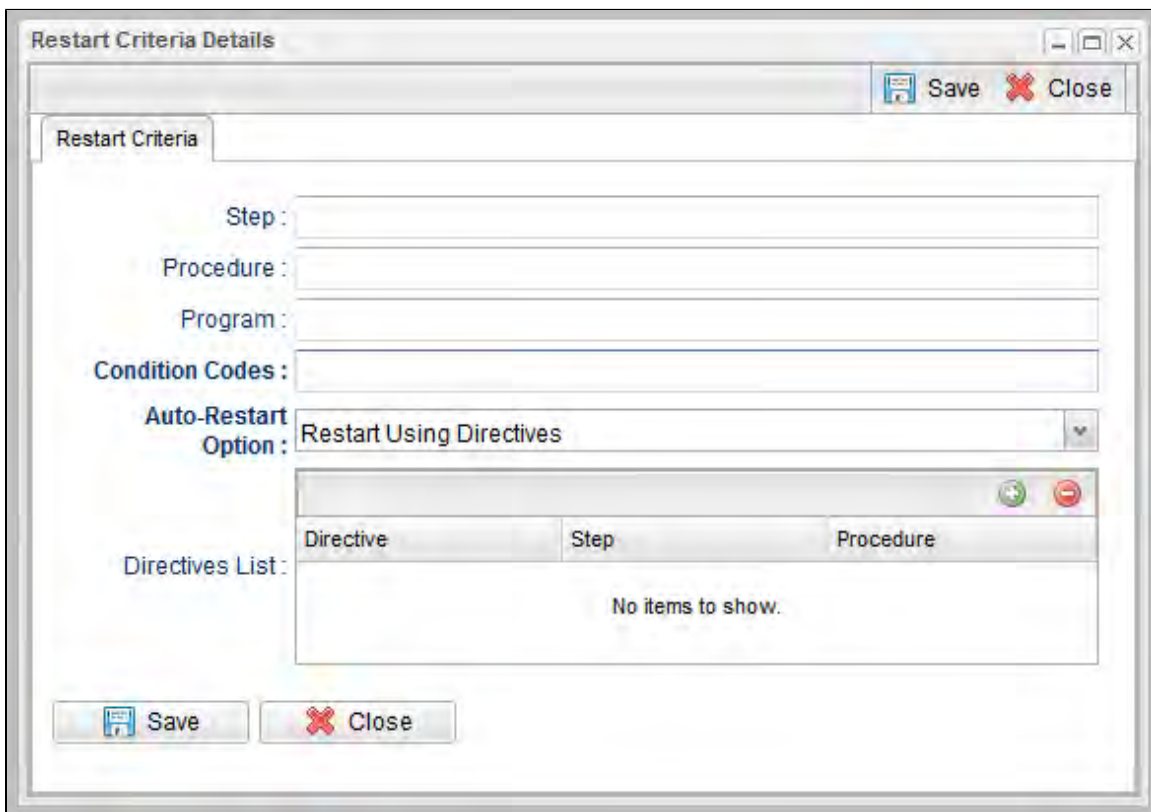
Update Launch Task View Parents Copy Delete Refresh Close

**Step 3** In the Auto-Restart Option field, select **Use Restart Criteria** from the drop-down list and then click the **Update** button.

**Step 4** Click the **Restart Criteria** tab. The Restart Criteria list displays.



**Step 5** Click **New**. Restart Criteria Details displays.



**Step 6** Using the field descriptions provided below as a guide, complete the fields as needed.

**Step 7** Click the **Save** button to save the record and return to the **Restart Criteria** list, or access the **Action** menu and select **Save** to save the record.

**Step 8** If appropriate, repeat these steps for any additional Restart Criteria that you want to add.

### Restart Criteria Field Descriptions

The following table describes the fields and buttons in the **Restart Criteria** Details.

Field Name	Description
Step	Job step name to match. A blank value or an asterisk ( * ) will match any job step name. Generic matching characters asterisk ( * ) and question mark ( ? ) match zero or more characters and one character, respectively.

Procedure	Procedure step name to match. A blank value or an asterisk ( * ) will match any procedure step name. Generic matching characters asterisk ( * ) and question mark ( ? ) match zero or more characters and one character, respectively.
Program	Program name to match. A blank value or an asterisk ( * ) will match any program name. Generic matching characters asterisk ( * ) and question mark ( ? ) match zero or more characters and one character, respectively.
Condition Codes	Conditions codes are integer return codes from the program or ABEND codes. Integer return codes are specified as a comma-separated list of integer values or ranges. Ranges are specified with a dash ( - ) separating the lower and upper bounds of the range. The z/OS job step return code range is 0-4095. ABEND codes are specified directly as either a user ABEND or a system ABEND. The ABEND code must be specified verbatim including leading zeroes.  For example: 1,6-4095,Sxxx,Unnnn,JCLERR
Auto-Restart Option	Method of step selection to perform for the restart. See <a href="#">Restart Criteria Logic</a> , below, for an explanation of the options.
Directives List	(See <a href="#">Restart Criteria Details - Directives</a> , below.)

## Restart Criteria Logic

Restart Criteria are processed when a task transitions to a Failed status, provided that:

- [Auto-Restart Option](#) = **Use Restart Criteria**.
- [Maximum Retries](#) = greater than zero.

When Restart Criteria processing begins, the Controller will search the list of Restart Criteria definitions to find a match for the current failure scenario. Matching is based on job step name, procedure step name, program name, and the step condition code. The search stops when the first definition is found. If a matching Restart Criteria is found, the Auto-Restart Option for that Restart Criteria is performed. If no matching Restart Criteria is found, the Controller takes no action and no job steps will be selected for restart.



**Note**

The Controller searches Restart Criteria definitions based on their order in the [Restart Criteria list](#); the definition at the top of the list is searched first. To change the order of the definitions in the list, drag and drop them to any location.

The Restart Criteria Details **Auto-Restart Option** specifies how steps will be selected for restart.

The following Auto-Restart Options are supported:

<a href="#">Restart From First Job Step</a>	All restartable job steps, from first to last, will be selected for restart.
<a href="#">Restart From Matching Job Step</a>	All restartable job steps, from the step that matched the Restart Criteria to the last job step, will be selected for restart.
<a href="#">Restart Using Directives</a>	Job steps will be selected for restart based on the directives specified in the Restart Criteria directive table.

## Restart Criteria Details - Directives

The following table describes the fields and button in the Directives section of the [Restart Criteria Details](#).

Field Name	Description
Directive	<p>Specifies a directive for step selection.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Start</b> - Directive used to specify the starting step in a range of steps selected for restart. The directive table can contain zero or one Start directives. If a start directive is not specified, the first job step will be used as the starting step.</li> <li>• <b>Skip</b> - Directive used to specify a step that should be skipped. Skipped steps will not be restarted. The directive table can contain zero or more Skip directives.</li> <li>• <b>End</b> - Directive used to specify the ending step in a range of steps that will be selected for restart. The directive table can contain zero or one End directives. If an end directive is not specified, the last job step will be used as the ending job step.</li> </ul>

<p>Step</p>	<p>The directive step optionally specifies:</p> <ol style="list-style-type: none"> <li>1. A relative step number. Relative step numbers begin with + or -, followed by some number of steps to offset from the step matched by the Restart Criteria. A value of -0 or +0 indicated that the directive is referring to the job step that matched the Restart Criteria.</li> </ol> <p>Relative step numbers are mutually exclusive with the Procedure field.</p> <p>If a relative step number is specified, no matching is performed. The directive will apply to an explicit offset from the job step that matched the Restart Criteria definition.</p> <ol style="list-style-type: none"> <li>2. The job step name to match. A blank value or an asterisk ( * ) will match any job step name. Generic matching characters asterisk ( * ) and question mark ( ? ) match zero or more characters and one character, respectively.</li> </ol>
<p>Procedure</p>	<p>The procedure step name to match. A blank value or an asterisk ( * ) will match any procedure step name. Generic matching characters asterisk ( * ) and question mark ( ? ) match zero or more characters and one character, respectively.</p>
<p><b>Add</b> button</p>	<p>Adds the directive defined by the fields above to the directive table.</p>

## Universal Command Task

- [Before You Begin](#)
- [Built-In Variables](#)
- [Creating a Universal Command Task](#)
  - [Universal Command Task Details](#)
  - [Universal Command Task Details Field Descriptions](#)
- [Viewing a Universal Command Task Instance](#)
  - [Universal Command Task Instance Details](#)
  - [Universal Command Task Instance Details Field Descriptions](#)
- [Output Redirection](#)
- [Running a Universal Command Task](#)
- [Monitoring Task Execution](#)

### Before You Begin

The Universal Command task allows you to run a platform-specific application on a machine where Universal Agent is running. Universal Command is functionality provided by the Agent that serves as an agent process. Universal Command runs on any supported platform: z/OS, Linux/Unix, and Windows.

To run a Universal Command task, you must first complete the following:

- [Install an Agent](#) on the target machine.
- Launch the Agent. When the Agent connects with the Controller, it automatically creates an [Agent resource definition](#) in the Controller database.



#### Note

If you are running multiple **ubroker** started tasks and want to run a Universal Command task on a specific **ubroker**, you must specify the service port number associated with that **ubroker** in the [Universal Command Options](#) field on the Universal Command Task Details. The syntax is `-port nnnn`.

### Built-In Variables

The following [built-in variables](#) can be used in a Universal Command task to pass data where appropriate:

- [Agent-Based Task Instance variables](#)
- [Task Instance variables](#)

### Creating a Universal Command Task



**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > Universal Command Tasks**. The Universal Command Tasks list displays a list of all currently defined Universal Command tasks.

Below the list, Universal Command Task Details for a new Universal Command task displays.

Task Name	Task Description	Command or Script	Updated By	Updated
stonebranch-universalcommandtask-01		Command	ops.admin	2015-06-03 10:57:19 -0400
stonebranch-universalcommandtask-02		Command	ops.admin	2015-06-03 10:57:52 -0400
stonebranch-universalcommandtask-03		Command	ops.admin	2015-06-03 10:58:02 -0400
stonebranch-universalcommandtask-04		Command	ops.admin	2015-06-03 10:58:14 -0400
stonebranch-universalcommandtask-05		Command	ops.admin	2015-06-03 10:58:24 -0400

**Step 2** Enter/select Details for a new Universal Command task, using the [field descriptions](#) below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



#### Note

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## Universal Command Task Details

The following Universal Command Task Details is for an existing Universal Command task.

Depending on the values that you enter / select for these fields, and whether or not the Universal Command task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Universal Command Task Details.


The screenshot shows the 'Universal Command Task Details' window for 'stonebranch-universalcommandtask-01'. The window has a title bar with standard OS controls and a toolbar with 'Update', 'Launch Task', 'View Parents', 'Copy', 'Delete', 'Refresh', and 'Close'. Below the toolbar are tabs for 'Variables', 'Actions', 'Virtual Resources', 'Mutually Exclusive', 'Instances', 'Triggers', 'Notes', and 'Versions'. The main content is organized into several sections:



- General:** Includes 'Task Name' (stonebranch-universalcommandtask-01), 'Version' (11), 'Task Description', 'Member of Business Services' (dropdown), 'Hold on Start' (checkbox), 'Virtual Resource Priority' (10), and 'Hold Resources on Failure' (checkbox).
- Universal Command Details:** Includes 'Utility Agent' (stonebranch-agent-01), 'Utility Agent Cluster' (stonebranch-agent-02), 'Utility Agent Variable' (checkbox), 'Utility Agent Cluster Variable' (checkbox), 'Utility Credentials' (stonebranch-credential-01), 'Utility Credentials Variable' (checkbox), 'UCMD Agent' (dropdown), 'UCMD Agent Option' (UCMD Agent), 'Command or Script' (Command), 'UCMD Credentials' (stonebranch-credential-02), 'UCMD Credentials Variable' (checkbox), and a 'Command' field containing 'dir'. There are also fields for 'UCMD Options', 'Runtime Directory', 'Exit Code Processing' (Success Exitcode Range), 'Exit Codes' (0), 'Automatic Output Retrieval' (Standard Output/Error), 'Start Line' (1), and 'Number of Lines' (100).
- Retry Options:** Includes 'Retry Exit Codes', 'Maximum Retries' (0), 'Retry Interval (Seconds)' (60), 'Retry Indefinitely' (checkbox), and 'Suppress Intermediate Failures' (checkbox).
- Wait/Delay Options:** Includes 'Wait To Start', 'Delay On Start', and 'Workflow Only' (all dropdown menus).
- Time Options:** Includes 'Late Start', 'Late Finish', 'Early Finish' (checkboxes) and 'User Estimated Duration' (Day, Hour, Min, Sec dropdowns).
- Critical Path Options:** Includes 'CP Duration' and 'CP Duration Unit' (Minutes).


At the bottom of the window is another toolbar with 'Update', 'Launch Task', 'View Parents', 'Copy', 'Delete', 'Refresh', and 'Close' buttons.

### Universal Command Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Universal Command Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <b>variables</b> supported. It is the responsibility of the user to develop a workable <b>naming scheme</b> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <b>Versions</b> tab to view previous versions. For details, see <b>Record Versioning</b> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <b>Business Services</b> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <b>releases</b> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Universal Command Details</b>	This section contains assorted detailed information about the task.
Utility Agent	Name of the Windows, Linux/Unix, or z/OS Agent resource that will communicate with the Universal Command Agent. If you do not specify an Agent, you must specify an <b>agent cluster</b> .
Utility Agent Variable	If enabled, the <b>Utility Agent</b> field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: \${variable name}. The variable must be a supported type as described in <b>Variables and Functions</b> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When <b>updating multiple Tasks</b>, to change from using a Utility Agent reference to using a Utility Agent variable, you must change the <b>Utility Agent Variable</b> field to <b>Yes</b> and specify the Utility Agent variable in the <b>Utility Agent Unresolved</b> field. Conversely, to change from using a Utility Agent variable to using a Utility Agent reference, you must change the <b>Utility Agent Variable</b> field to <b>No</b> and specify the Utility Agent reference in the <b>Utility Agent</b> field.</p> </div>

Utility Agent Cluster	Group of Agents, one of which the Controller will choose to run this task. You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific Agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.
Utility Agent Cluster Variable	<p>Indication of whether the <a href="#">Utility Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Utility Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div data-bbox="316 426 1445 636" style="background-color: #ffffcc; padding: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent Cluster reference to using a Utility Agent Cluster variable, you must change the <b>Utility Agent Cluster Variable</b> field to <b>Yes</b> and specify the Utility Agent Cluster variable in the <b>Utility Agent Cluster Unresolved</b> field. Conversely, to change from using a Utility Agent Cluster variable to using a Utility Agent Cluster reference, you must change the <b>Utility Agent Cluster Variable</b> field to <b>No</b> and specify the Utility Agent Cluster reference in the <b>Utility Agent Cluster</b> field.</p> </div>
Utility Credentials	Login credentials that the Agent will use to access the Universal Command server machine.
Utility Credentials Variable	<p>Indication of whether the <a href="#">Utility Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Utility Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div data-bbox="316 915 1445 1125" style="background-color: #ffffcc; padding: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Credentials reference to using a Utility Credentials variable, you must change the <b>Utility Credentials Variable</b> field to <b>Yes</b> and specify the Utility Credentials variable in the <b>Utility Credentials Unresolved</b> field. Conversely, to change from using a Utility Credentials variable to using a Utility Credentials reference, you must change the <b>Utility Credentials Variable</b> field to <b>No</b> and specify the Utility Credentials reference in the <b>Utility Credentials</b> field.</p> </div>
UCMD Agent	<p>Depending on the value in the <a href="#">UCMD Agent Option</a> field, this field contains either:</p> <ul style="list-style-type: none"> <li>• Record name from the UCMD Agent table.</li> <li>• Variable that will be resolved when the task is launched.</li> <li>• Host name of a machine where the UCMD Agent is running.</li> </ul>
UCMD Agent Option	<p>Specifies how the name of the UCMD Agent is being supplied in the <a href="#">UCMD Agent</a> field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• UCMD Agent - UCMD Agent record is selected from the UCMD Agent table.</li> <li>• UCMD Agent Variable - UCMD Agent field contains a variable that will be resolved when the task is launched.</li> <li>• UCMD Agent Hostname - UCMD Agent field contains the host name where the UCMD Agent is running. The host name must be accessible by the Controller.</li> </ul>
UCMD Credentials	Login <a href="#">credentials</a> that Controller will use to access the remote machine where the UCMD Agent is running.

UCMD Credentials Variable	<p>Indication of whether the <a href="#">UCMD Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">UCMD Credentials</a> as a variable (checked). Use the format: <code>\$(variablename)</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a UCMD Credentials reference to using a UCMD Credentials variable, you must change the <b>UCMD Credentials Variable</b> field to <b>Yes</b> and specify the UCMD Credentials variable in the <b>UCMD Credentials Unresolved</b> field. Conversely, to change from using a UCMD Credentials variable to using a UCMD Credentials reference, you must change the <b>UCMD Credentials Variable</b> field to <b>No</b> and specify the UCMD Credentials reference in the <b>UCMD Credentials</b> field.</p> </div>
Command or Script	<p>Specifies whether a single command or a script is being executed.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Command (default)</li> <li>• Script</li> </ul>
Command	<p>If <a href="#">Command or Script</a> = Command; Required. Command being executed on the remote machine. <a href="#">Variables</a> supported.</p>
Script File	<p>If <a href="#">Command or Script</a> = Script; Required. Path and filename of the script file that will be executed on the remote machine.</p>
Script Options	<p>If <a href="#">Command or Script</a> = Script; Optional. One or more command line options to pass to the script file.</p>
UCMD Options	<p>Any UCMD options needed by the program to execute properly. <a href="#">Variables</a> supported.</p>
Runtime Directory	<p>Directory from which the application should be executed. <a href="#">Variables</a> supported.</p>
Exit Code Processing	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Output Contains Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Failure Output Contains Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul>
Output Type	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>

Scan Output For	Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File (for <a href="#">Exit Code Processing</a> )	Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.
Exit Codes	Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record.  Options: <ul style="list-style-type: none"> <li>• None Do not attach any output to the task instance record.</li> <li>• Standard Output Attach all standard output.</li> <li>• Standard Error Attach standard error output.</li> <li>• File Attach the file specified in the <a href="#">Output File</a> field.</li> <li>• Standard Output/Error Attach all standard output and standard error output.</li> </ul>
Start Line	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. <ul style="list-style-type: none"> <li>• If a <b>Start Line</b> value is not specified, the default is 1.</li> <li>• If the <b>Start Line</b> value is -1, data will be retrieved starting at the end of the file.</li> </ul>
Number of Lines	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <a href="#">Retrieve Output Default Maximum Lines</a> Universal Controller system property.
Scan Text	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the <b>Number of Lines</b> above and below the first line matched.  if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for <a href="#">Automatic Output Retrieval</a> )	Required if <a href="#">Automatic Output Retrieval</a> = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the <a href="#">Exit Codes</a> field. <a href="#">Maximum Retries</a> must be greater than 0.  If this field is empty, any exit code potentially will cause a retry.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.


<p>Retry Indefinitely</p>	<p>User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.</p>
<p>Retry Interval (Seconds)</p>	<p>User-defined; number of seconds between each retry.</p>
<p>Suppress Intermediate Failures</p>	<p>User-defined; If the task instance is in the <a href="#">Failed status</a>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p>Workflow Only</p>	<p>Specification for whether or not to apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• - - System Default - - Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications as defined by the <b>System Default Wait/Delay Workflow Only</b> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</li> <li>• No Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications whether or not the task is in a Workflow.</li> </ul>



<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a> ). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.

Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for task instances of the task.</p>
First Time Ran	<p>System-supplied; date and time this task first ran.</p>
Last Time Ran	<p>System-supplied; date and time the task last ran.</p>
Last Instance Duration	<p>System-supplied; amount of time the task took to run the last time it ran.</p>
Lowest Instance Time	<p>System-supplied; shortest amount of time this task has taken to run.</p>

<b>Average Instance Time</b>	System-supplied; average amount of time this task takes to run.
<b>Highest Instance Time</b>	System-supplied; longest amount of time this task has taken to run.
<b>Number of Instances</b>	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" data-bbox="277 478 1484 840"> <tr> <td data-bbox="277 478 418 548"> <b>Abort Action</b> </td> <td data-bbox="418 478 1484 548">                     Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.                 </td> </tr> <tr> <td data-bbox="277 548 418 621"> <b>Email Notification</b> </td> <td data-bbox="418 548 1484 621">                     Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.                 </td> </tr> <tr> <td data-bbox="277 621 418 695"> <b>Set Variable</b> </td> <td data-bbox="418 621 1484 695">                     Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.                 </td> </tr> <tr> <td data-bbox="277 695 418 768"> <b>SNMP Notification</b> </td> <td data-bbox="418 695 1484 768">                     Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.                 </td> </tr> <tr> <td data-bbox="277 768 418 840"> <b>System Operation</b> </td> <td data-bbox="418 768 1484 840">                     Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.                 </td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .										
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<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Instances</b>	Lists all instances of the task.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## Viewing a Universal Command Task Instance

When a Universal Command task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [Universal Command Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

## Universal Command Task Instance Details

The following Universal Command Task Instance Details contains information on the execution of the task shown in the [Universal Command Task Details](#).

Update Re-run View Parent Retrieve Output... Delete Refresh Close

Universal Command Task Instance
Virtual Resources
Exclusive Requests
Output
Notes

**General**

Instance Name:  Reference Id:

Task:  Invoked By:

Task Description:

Member of Business Services:  Execution User:

Virtual Resource Priority:  Hold Resources on Failure:

**Status**

Status:  Exit Code:

Status Description:

Operational Memo:

Queued Time:

Trigger Time:  Start Time:

Launch Time:  End Time:

Duration:

**Universal Command Details**

Utility Agent:  Utility Agent Cluster:

Utility Agent Variable:  Utility Agent Cluster Variable:

Utility Credentials:  Utility Credentials Variable:

UCMD Agent:  UCMD Credentials:

UCMD Agent Option:  UCMD Credentials Variable:

Command or Script:

Command:

UCMD Options:

Runtime Directory:

Exit Code Processing:

Exit Codes:

Automatic Output Retrieval:

Start Line:  Number of Lines:

Scan Text:

**Retry Options**

Retry Exit Codes:

Maximum Retries:  Retry Indefinitely:

Retry Interval (Seconds):  Suppress Intermediate Failures:

Current Retry Count:

**Wait/Delay Options**

Wait To Start:  Wait Duration In Seconds:

Delay On Start:  Delay Duration In Seconds:

**Critical Path Options**

CP Duration:  CP Duration Unit:

**Statistics**

User Estimated End Time:  Average Estimated End Time:


Shortest Estimated End Time:  Longest Estimated End Time:




Update Re-run View Parent Retrieve Output... Delete Refresh Close

## Universal Command Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Universal Command Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	<p>System-supplied; how the task instance was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Trigger: (Trigger Name)</b> Instance was launched by the named trigger.</li> <li>• <b>Workflow: (Workflow Name)</b> Instance was launched by the named workflow.</li> <li>• <b>Manually Launched</b> Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	<p>Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.</p> <p>Options: 1 (high) - 20 (low).</p> <p>Default is 10.</p>
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.

Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
<b>Universal Command Details</b>	This section contains assorted detailed information about the task instance.
Utility Agent	Name of the Windows or Linux/Unix Agent resource that will communicate with the Universal Command Agent. If you do not specify an Agent, you must specify an <a href="#">agent cluster</a> .
Utility Agent Variable	<p>If enabled, the <a href="#">Utility Agent</a> field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent reference to using a Utility Agent variable, you must change the <b>Utility Agent Variable</b> field to <b>Yes</b> and specify the Utility Agent variable in the <b>Utility Agent Unresolved</b> field. Conversely, to change from using a Utility Agent variable to using a Utility Agent reference, you must change the <b>Utility Agent Variable</b> field to <b>No</b> and specify the Utility Agent reference in the <b>Utility Agent</b> field.</p> </div>
Utility Agent Cluster	Group of Agents, one of which the Controller will choose to run this task. You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific Agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.

Utility Agent Cluster Variable	<p>Indication of whether the <a href="#">Utility Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Utility Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent Cluster reference to using a Utility Agent Cluster variable, you must change the <b>Utility Agent Cluster Variable</b> field to <b>Yes</b> and specify the Utility Agent Cluster variable in the <b>Utility Agent Cluster Unresolved</b> field. Conversely, to change from using a Utility Agent Cluster variable to using a Utility Agent Cluster reference, you must change the <b>Utility Agent Cluster Variable</b> field to <b>No</b> and specify the Utility Agent Cluster reference in the <b>Utility Agent Cluster</b> field.</p> </div>
Utility Credentials	<p>Login credentials that the Agent will use to access the Universal Command server machine.</p>
Utility Credentials Variable	<p>Indication of whether the <a href="#">Utility Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Utility Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Credentials reference to using a Utility Credentials variable, you must change the <b>Utility Credentials Variable</b> field to <b>Yes</b> and specify the Utility Credentials variable in the <b>Utility Credentials Unresolved</b> field. Conversely, to change from using a Utility Credentials variable to using a Utility Credentials reference, you must change the <b>Utility Credentials Variable</b> field to <b>No</b> and specify the Utility Credentials reference in the <b>Utility Credentials</b> field.</p> </div>
UCMD Agent	<p>Depending on the value in the <a href="#">UCMD Agent Option</a> field, this field contains either:</p> <ul style="list-style-type: none"> <li>• Record name from the UCMD Agent table.</li> <li>• Variable that will be resolved when the task is launched.</li> <li>• Host name of a machine where the UCMD Agent is running.</li> </ul>
UCMD Agent Option	<p>Specifies how the name of the UCMD Agent is being supplied in the <a href="#">UCMD Agent</a> field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• UCMD Agent - UCMD Agent record is selected from the UCMD Agent table.</li> <li>• UCMD Agent Variable - UCMD Agent field contains a variable that will be resolved when the task is launched.</li> <li>• UCMD Agent Hostname - UCMD Agent field contains the host name where the UCMD Agent is running. The host name must be accessible by the Controller.</li> </ul>
UCMD Credentials	<p>Login <a href="#">credentials</a> that Controller will use to access the remote machine where the UCMD Agent is running.</p>
UCMD Credentials Variable	<p>Indication of whether the <a href="#">UCMD Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">UCMD Credentials</a> as a variable (checked). Use the format: <code>\${variablename}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a UCMD Credentials reference to using a UCMD Credentials variable, you must change the <b>UCMD Credentials Variable</b> field to <b>Yes</b> and specify the UCMD Credentials variable in the <b>UCMD Credentials Unresolved</b> field. Conversely, to change from using a UCMD Credentials variable to using a UCMD Credentials reference, you must change the <b>UCMD Credentials Variable</b> field to <b>No</b> and specify the UCMD Credentials reference in the <b>UCMD Credentials</b> field.</p> </div>



Command or Script	<p>Specifies whether a single command or a script is being executed.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Command (default)</li> <li>• Script</li> </ul>
Command	If <a href="#">Command or Script</a> = Command; Required. Command being executed on the remote machine. <a href="#">Variables</a> supported.
Script File	If <a href="#">Command or Script</a> = Script; Required. Path and filename of the script file that will be executed on the remote machine.
Script Options	If <a href="#">Command or Script</a> = Script; Optional. One or more command line options to pass to the script file.
UCMD Options	Any UCMD options needed by the program to execute properly. <a href="#">Variables</a> supported.
Runtime Directory	Directory from which the application should be executed. <a href="#">Variables</a> supported.
Exit Code Processing	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Output Contains Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Failure Output Contains Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul>
Output Type	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>
Exit Codes	Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Scan Output For	Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File (for <a href="#">Exit Code Processing</a> )	Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.

Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record.  Options: <ul style="list-style-type: none"> <li>• None Do not attach any output to the task instance record.</li> <li>• Standard Output Attach all standard output.</li> <li>• Standard Error Attach standard error output.</li> <li>• File Attach the file specified in the <a href="#">Output File</a> field.</li> <li>• Standard Output/Error Attach all standard output and standard error output.</li> </ul>
Start Line	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. <ul style="list-style-type: none"> <li>• If a <b>Start Line</b> value is not specified, the default is 1.</li> <li>• If the <b>Start Line</b> value is -1, data will be retrieved starting at the end of the file.</li> </ul>
Number of Lines	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <a href="#">Retrieve Output Default Maximum Lines</a> Universal Controller system property.
Scan Text	If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the <b>Number of Lines</b> above and below the first line matched.  if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for <a href="#">Automatic Output Retrieval</a> )	Required if <a href="#">Automatic Output Retrieval</a> = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the <a href="#">Exit Codes</a> field. <a href="#">Maximum Retries</a> must be greater than 0.  If this field is empty, any exit code potentially will cause a retry.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.

<p>Suppress Intermediate Failures</p>	<p>User-defined; If the task instance is in the <b>Failed status</b>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <b>Maximum Retries</b> value has been entered or <b>Retry Indefinitely</b> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<b>Abort</b>, <b>Email Notification</b>, <b>Set Variable</b>, <b>SNMP Notification</b>, and <b>System Operation</b>) defined for the task instance on a <b>Failed status</b>.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the <b>Failed status</b>. Also, any <b>Task Monitor</b> task that has a <b>Time Scope</b> in the past will disqualify any matching task instance in the past with a <b>Failed status</b> if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the <b>Failed</b> task instance will not transition to the <b>Running/Problems</b> status.</li> </ul>
<p>Next Retry Time</p>	<p>System-supplied for a task instance in the <b>Failed status</b> that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.</p>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>

Wait Duration	If <a href="#">Wait To Start</a> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <a href="#">Wait To Start</a> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.

Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a> ). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

<b>CP Duration Unit</b>	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	This section contains time-related statistics for the task instance.
<b>User Estimated End Time</b>	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
<b>Shortest Estimated End Time</b>	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Average Estimated End Time</b>	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Longest Estimated End Time</b>	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Projected End Time</b>	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.

<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Output</b>	Displays output generated from the process, if any, based on specifications provided by the user in the <a href="#">Automatic Output Retrieval</a> fields in the task Details.  If automatic output retrieval was not available or was not selected, output can be obtained by clicking the <a href="#">Retrieve Output</a> button.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Output Redirection

An Agent processes Universal Command, File Transfer/UDM, and SAP task types differently than Windows and Linux/Unix task types. Universal Command, File Transfer/UDM, and SAP command lines are sent to the user process via standard input, so any redirection operators entered as task command input are not processed as expected.

If you want to direct output from a Universal Command task to your file system, the `-uagstdio` command option lets you specify the same output redirection commands that are available for Windows and Linux/Unix task types. UAG will apply the user-specified value for `-uagstdio` directly to the command image.

The I/O redirection commands that you can use with `-uagstdio` are dependent on the OS/command shell. You should be able to set up any redirection that the OS/command shell supports (just as with Windows and Unix/Linux task types).

The syntax of `-uagstdio` is similar to Universal Command, Universal Data Mover, and Universal Connector [command line options](#); option followed by value.

For the Universal Command task type, you can specify `uagstdio` in either of the following fields:

- [Command](#)
- [Universal Command Options](#)

### -uagstdio Examples

```
-uagstdio >C:\UNIVERSAL_COMMANDOUT\Universal Command.out
```

If the `-uagstdio` value contains spaces, it must be enclosed in double quotation marks ( " ):

```
-uagstdio ">C:\UNIVERSAL_COMMANDOUT\Universal Command.out 2>C:\UNIVERSAL_COMMANDOUT\Universal Command.err"
```

If the quoted value itself requires double quotation marks, they must be doubled ( "" ):

```
-uagstdio ">C:\tmp\"\"Universal Command output\"\"\Universal Command.out 2>C:\tmp\"\"Universal Command output\"\"\Universal Command.err"
```

## Running a Universal Command Task

You can run a Universal Command task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the Universal Command tasks list or Universal Command Task Details [Action menu](#).
- As part of a [workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).



## SAP Task

- Overview
- Before You Begin
- Built-In Variables
- Creating an SAP Task
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  - SAP Task Instance Details
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- Running an SAP Task
- Monitoring Task Execution

### Overview

**Note**

These instructions assume the user has a working knowledge of SAP.

The SAP task allows you to send commands to an SAP system and gather status information and output back from SAP. The SAP task uses Stonebranch's proprietary [Universal Connector *for Use with SAP® ERP* (USAP) to communicate with SAP. Universal Connector allows Universal Controller to connect to an SAP system and manage SAP background processing tasks.

### Before You Begin

To run an SAP task, you must first complete the following:

- Identify a [Universal Agent for Linux/Unix](#) that will interface with the SAP system.
- Define an [SAP connection](#) in the Controller database.

### Built-In Variables

The following built-in variables can be used in a SAP task to pass data where appropriate:

- Task Instance variables
- Agent-Based Task Instance variables
- SAP Task variables

### Creating an SAP Task

**Step 1** From the Automation Center navigation pane, select **Tasks > SAP Tasks**. The SAP Tasks list displays a list of all currently defined SAP tasks.

Below the list, SAP Task Details for a new SAP task displays.

The screenshot shows the 'SAP Tasks' interface. At the top, there is a tab labeled 'SAP Tasks' and a dropdown menu showing '5 SAP Tasks'. Below this is a table with columns: 'Task Name', 'Task Description', 'Updated By', and 'Updated'. The table contains five rows of tasks, all with 'ops.admin' as the updated by and a timestamp of '2014-06-13 14:04:59 -0400'. Below the table is a 'SAP Task Details' section with tabs for 'SAP Task', 'Variables', 'Actions', 'Virtual Resources', 'Mutually Exclusive', 'Instances', 'Triggers', 'Notes', and 'Versions'. The 'SAP Task' tab is active, showing fields for 'Task Name', 'Version' (set to 1), 'Task Description', 'Member of Business Services', 'Hold on Start', 'Virtual Resource Priority' (set to 10), 'Hold Resources on Failure', 'Utility Agent', 'Utility Agent Cluster', 'Agent Variable', 'Agent Cluster Variable', 'Credentials', and 'Credentials Variable'.

**Step 2** Enter/select Details for a new SAP task, using the field descriptions below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily **hide the list** above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To **open** an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the **Details icon** next to a record name in the list, or right-click a record in the list and then click **Open** in the **Action menu** that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the **Action menu** that displays, to display the record Details under a new tab on the record list page (see **Record Details as Tabs**).

## SAP Task Details

The following SAP Task Details is for an existing SAP task.

Depending on the values that you enter / select for these fields, and whether or not the SAP task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the SAP Task Details.

SAP Task Details: stonebranch-saptask-01

Update Launch Task View Parents Copy Delete Refresh Close

SAP Task Variables Actions Virtual Resources Mutually Exclusive Instances Triggers Notes Versions

**General**

Task Name: stonebranch-saptask-01 Version: 1

Task Description:

Member of Business Services:

Hold on Start:

Virtual Resource Priority: 10 Hold Resources on Failure:

**SAP Details**

Utility Agent: qa-agentsim1 - simagent1 Utility Agent Cluster:

Utility Agent Variable:  Utility Agent Cluster Variable:

Utility Credentials: SAP Connection: SAP Credentials: QATEST

Utility Credentials Variable:  SAP Credentials Variable:

SAP Language: Command Group: Run

Definition of Model: USAP Definition File

Script or File System: Script

Script: SAP DEF BTCLOOP (QAOPS-BTCLOOP)

Start Immediately:

SAP Target Server:

Print Application Log:

Print Application RC:

Use Application RC:

SAP Command Options:

Runtime Directory:

Environment Variables:

Name	Value
No items to show.	

Exit Code Processing: Success Exitcode Range

Exit Codes: 0

Automatic Output Retrieval: Standard Output/Error

Start Line: 1 Number of Lines: 100

Scan Text:

**Retry Options**

Maximum Retries: 0 Retry Indefinitely:

Retry Interval (Seconds): 60 Suppress Intermediate Failures:

**Wait/Delay Options**

Wait To Start: -- None --

Delay On Start: -- None --

Workflow Only: -- System Default --

**Time Options**

Late Start:

Late Finish:

Early Finish:

User Estimated Duration: Day Hour Min Sec


**Critical Path Options**



CP Duration: CP Duration Unit: Minutes


Update Launch Task View Parents Copy Delete Refresh Close

## SAP Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the SAP Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions</a> tab to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>SAP Details</b>	This section contains assorted detailed information about the task.
Utility Agent	Name of the Linux/Unix or Windows Agent that will communicate with the SAP system. If you do not specify an Agent, you must specify an <a href="#">agent cluster</a> .
Utility Agent Variable	If enabled, the <a href="#">Utility Agent</a> field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in <a href="#">Variables and Functions</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent reference to using a Utility Agent variable, you must change the <b>Utility Agent Variable</b> field to <b>Yes</b> and specify the Utility Agent variable in the <b>Utility Agent Unresolved</b> field. Conversely, to change from using a Utility Agent variable to using a Utility Agent reference, you must change the <b>Utility Agent Variable</b> field to <b>No</b> and specify the Utility Agent reference in the <b>Utility Agent</b> field.</p> </div>

Utility Agent Cluster	<p>Group of Agents, one of which the Controller will choose to run this task. You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific Agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.</p>
Utility Agent Cluster Variable	<p>Indication of whether the <a href="#">Utility Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Utility Agent Cluster</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div data-bbox="412 449 1445 680" style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent Cluster reference to using a Utility Agent Cluster variable, you must change the <b>Utility Agent Cluster Variable</b> field to <b>Yes</b> and specify the Utility Agent Cluster variable in the <b>Utility Agent Cluster Unresolved</b> field. Conversely, to change from using a Utility Agent Cluster variable to using a Utility Agent Cluster reference, you must change the <b>Utility Agent Cluster Variable</b> field to <b>No</b> and specify the Utility Agent Cluster reference in the <b>Utility Agent Cluster</b> field.</p> </div>
Utility Credentials	<p><a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.</p>
Utility Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div data-bbox="412 989 1445 1192" style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
SAP Connection	<p>Name of the <a href="#">SAP connection</a>. The SAP connection specifies information about the SAP server. Select an existing SAP Connection from the drop-down list or click the icon to create a new SAP Connection.</p>
SAP Language	<p>SAP logon language used when executing the SAP task. Valid values are:</p> <ul style="list-style-type: none"> <li>• Any valid 1-character SAP language identifier.</li> <li>• Any valid 2-character ISO language identifier.</li> <li>• (no value). SAP will use the default language set up for the user. If there is no such default, the default is EN (English).</li> </ul>
SAP Credentials	<p>Login credentials that the Controller will use to access the SAP system. The credentials are stored in the Universal Controller credentials table; see <a href="#">Credentials</a>.</p>

<p>SAP Credentials Variable</p>	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a <a href="#">Credentials</a> reference to using a <a href="#">Credentials</a> variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the <a href="#">Credentials</a> variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a <a href="#">Credentials</a> variable to using a <a href="#">Credentials</a> reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the <a href="#">Credentials</a> reference in the <b>Credentials</b> field.</p> </div>
<p>Command Group</p>	<p>See <a href="#">Universal Connector Commands</a>, below, for a description of all supported commands and their contingent fields (options).</p>
<p>SAP Command Options</p>	<p>Use this field to specify any additional command options supported by <a href="#">Universal Connector (USAP)</a> .</p>
<p>Runtime Directory</p>	<p>Directory from which the application should be executed. <a href="#">Variables</a> supported.</p>
<p>Environment Variables</p>	<p>Allows you to enter environment variables needed by the program to run.</p> <p>To add a variable, click the <b>+</b> icon and enter a <b>Name</b> and <b>Value</b>. To delete a variable, select in the list of variables and click the <b>-</b> icon.</p> <p>You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath.</p>
<p>Exit Code Processing</p>	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Success Exitcode Range</b>                      Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• <b>Failure Exitcode Range</b>                      Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• <b>Success Output Contains</b>                      Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• <b>Failure Output Contains</b>                      Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• <b>Step Conditions (z/OS only)</b>                      Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul>
<p>Output Type</p>	<p>Required if <a href="#">Exit Code Processing</a> = <a href="#">Success Output Contains</a> or <a href="#">Failure Output Contains</a>; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>
<p>Scan Output For</p>	<p>Required if <a href="#">Exit Code Processing</a> = <a href="#">Success Output Contains</a> or <a href="#">Failure Output Contains</a>; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.</p>

Output File (for Exit Code Processing)	Required if <b>Output Type</b> = File; path and file name of the output file that should be scanned for the text in the <b>Scan Output For</b> field.
Exit Codes	Required if <b>Exit Code Processing</b> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record.  Options: <ul style="list-style-type: none"> <li>• None Do not attach any output to the task instance record.</li> <li>• Standard Output Attach all standard output.</li> <li>• Standard Error Attach standard error output.</li> <li>• File Attach the file specified in the <b>Output File</b> field.</li> <li>• Standard Output/Error Attach all standard output and standard error output.</li> </ul>
Start Line	If <b>Automatic Output Retrieval</b> = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. <ul style="list-style-type: none"> <li>• If a <b>Start Line</b> value is not specified, the default is 1.</li> <li>• If the <b>Start Line</b> value is -1, data will be retrieved starting at the end of the file.</li> </ul>
Number of Lines	If <b>Automatic Output Retrieval</b> = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <b>Retrieve Output Default Maximum Lines</b> Universal Controller system property.
Scan Text	If <b>Automatic Output Retrieval</b> = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the <b>Number of Lines</b> above and below the first line matched.  if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for Automatic Output Retrieval)	Required if <b>Automatic Output Retrieval</b> = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <b>Maximum Retries</b> field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.




<p>Suppress Intermediate Failures</p>	<p>User-defined; If the task instance is in the <a href="#">Failed status</a>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
<p>Next Retry Time</p>	<p>System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.</p>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <a href="#">Wait Time</a> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <a href="#">Wait To Start</a> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <a href="#">Wait To Start</a> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>

Wait Duration	If <a href="#">Wait To Start</a> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <a href="#">Wait To Start</a> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
Workflow Only	<p>Specification for whether or not to apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• -- System Default -- Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications as defined by the <a href="#">System Default Wait/Delay Workflow Only</a> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</li> <li>• No Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications whether or not the task is in a Workflow.</li> </ul>
<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.

Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
Late Finish Duration	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>

CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for task instances of the task.
First Time Ran	System-supplied; date and time this task first ran.
Last Time Ran	System-supplied; date and time the task last ran.
Last Instance Duration	System-supplied; amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; shortest amount of time this task has taken to run.
Average Instance Time	System-supplied; average amount of time this task takes to run.
Highest Instance Time	System-supplied; longest amount of time this task has taken to run.
Number of Instances	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.

<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.										
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>										
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.										
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.										
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task instance.										
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.										
<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>Task instance status</li> <li>Exit codes</li> <li>Late start</li> <li>Late finish</li> <li>Early finish</li> </ul> <p>Actions are:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #f2f2f2;"><b>Abort Action</b></td> <td>Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td style="background-color: #f2f2f2;"><b>Email Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td style="background-color: #f2f2f2;"><b>Set Variable</b></td> <td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td style="background-color: #f2f2f2;"><b>SNMP Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td style="background-color: #f2f2f2;"><b>System Operation</b></td> <td>Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .										
<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .										
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<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of the task.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										

<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .

## Viewing an SAP Task Instance

When an SAP task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [SAP Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

### SAP Task Instance Details

The following SAP Task Instance Details contains information on the execution of the task shown in the [SAP Task Details](#).

SAP Task Instance Details: stonebranch-saptask-01

Update Re-run View Parent Retrieve Output... SAP Delete Refresh Close

SAP Task Instance Virtual Resources Exclusive Requests Output Notes

**General**

Instance Name: stonebranch-saptask-01 Reference Id: 10  
 Task: stonebranch-saptask-01 Invoked By: Manually Launched  
 Task Description: Sample  
 Member of Business Services: Execution User: stonebranch-user-01  
 Virtual Resource Priority: 10 Hold Resources on Failure:

**Status**

Status: Success Exit Code: 0  
 Status Description:  
 Operational Memo:  
 Wait Until Time: 2015-05-08 10:09:49 -0400  
 Queued Time: 2015-02-06 14:45:37 -0500  
 Trigger Time: Start Time: 2015-02-06 14:45:41 -0500  
 Launch Time: 2015-02-06 14:45:37 -0500 End Time: 2014-06-20 13:09:49 -0400  
 Duration: 3 Seconds

**SAP Details**

Utility Agent: Utility Agent Cluster:  
 Utility Agent Variable:  Utility Agent Cluster Variable:   
 Utility Credentials: Utility Credentials Variable:   
 SAP Connection: stonebranch-sapconnection-01 SAP Credentials: stonebranch-credential-01  
 SAP Language: SAP Credentials Variable:   
 SAP Job Name: SAP Job ID:  
 SAP Process Chain Log ID:  
 SAP InfoPackage Request ID:  
 Command Group: Display  
 Display Command: Select  
 SAP Job Name: \*  
 SAP Job ID:  
 From Date:  
 To Date:  
 SAP Command Options:  
 Runtime Directory:  
 Environment Variables:  

Name	Value
No items to show.	

 Exit Code Processing: Success Exitcode Range  
 Exit Codes: 0  
 Automatic Output Retrieval: Standard Output/Error  
 Start Line: 1 Number of Lines: 100  
 Scan Text:

**Retry Options**

Retry Exit Codes:  
 Maximum Retries: 0 Retry Indefinitely:   
 Retry Interval (Seconds): 60 Suppress Intermediate Failures:   
 Current Retry Count: 0

**Wait/Delay Options**


Wait To Start: Seconds Wait Duration In Seconds: 30



## SAP Task Instance Details Field Descriptions


The following table describes the fields, buttons, and tabs that display in SAP Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	System-supplied; how the task instance was launched. Options: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.



Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
<b>SAP Details</b>	This section contains assorted detailed information about the task instance.
Utility Agent	Name of the Linux/Unix or Windows Agent that will communicate with the SAP system. If you do not specify an Agent, you must specify an <a href="#">agent cluster</a> .
Utility Agent Variable	<p>If enabled, the <a href="#">Utility Agent</a> field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent reference to using a Utility Agent variable, you must change the <b>Utility Agent Variable</b> field to <b>Yes</b> and specify the Utility Agent variable in the <b>Utility Agent Unresolved</b> field. Conversely, to change from using a Utility Agent variable to using a Utility Agent reference, you must change the <b>Utility Agent Variable</b> field to <b>No</b> and specify the Utility Agent reference in the <b>Utility Agent</b> field.</p> </div>

Utility Agent Cluster	<p>Group of Agents, one of which the Controller will choose to run this task. You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific Agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.</p>
Utility Agent Cluster Variable	<p>Indication of whether the <a href="#">Utility Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Utility Agent Cluster</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div data-bbox="427 451 1446 682" style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent Cluster reference to using a Utility Agent Cluster variable, you must change the <b>Utility Agent Cluster Variable</b> field to <b>Yes</b> and specify the Utility Agent Cluster variable in the <b>Utility Agent Cluster Unresolved</b> field. Conversely, to change from using a Utility Agent Cluster variable to using a Utility Agent Cluster reference, you must change the <b>Utility Agent Cluster Variable</b> field to <b>No</b> and specify the Utility Agent Cluster reference in the <b>Utility Agent Cluster</b> field.</p> </div>
Credentials	<p><a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.</p>
Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div data-bbox="427 989 1446 1192" style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
SAP Connection	<p>Name of the <a href="#">SAP connection</a>. The SAP connection specifies information about the SAP server. Select an existing SAP Connection from the drop-down list or click the icon to create a new SAP Connection.</p>
SAP Language	<p>SAP logon language used when executing the SAP task. Valid values are:</p> <ul style="list-style-type: none"> <li>• Any valid 1-character SAP language identifier.</li> <li>• Any valid 2-character ISO language identifier.</li> <li>• (no value). SAP will use the default language set up for the user. If there is no such default, the default is EN (English).</li> </ul>
SAP Credentials	<p>Login credentials that the Controller will use to access the SAP system. The credentials are stored in the Universal Controller credentials table; see <a href="#">Credentials</a>.</p>

<p>SAP Credentials Variable</p>	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
<p>SAP Job Name</p>	<p>Job name of the SAP job. <a href="#">Variables</a> supported.</p>
<p>SAP Job ID</p>	<p>Job ID of the SAP job. <a href="#">Variables</a> supported.</p>
<p>SAP Process Chain Log ID</p>	<p>Log ID for process chain instance to be monitored to completion.</p>
<p>SAP InfoPackage Request ID</p>	<p>Request ID of the InfoPackage that is to be monitored.</p>
<p>Command Group</p>	<p>See <a href="#">Universal Connector Commands</a>, below, for a description of all supported commands and their contingent fields (options).</p>
<p>SAP Command Options</p>	<p>Use this field to specify any additional command options supported by <a href="#">Universal Connector (USAP)</a> .</p>
<p>Runtime Directory</p>	<p>Directory from which the application should be executed. <a href="#">Variables</a> supported.</p>
<p>(Environment Variables) Name and Value</p>	<p>Allows you to enter environment variables needed by the program to run.</p> <p>To add a variable, click the + icon and enter a <b>Name</b> and <b>Value</b>. To delete a variable, select in the list of variables and click the - icon.</p> <p>You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath.</p>
<p>Exit Code Processing</p>	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Success Exitcode Range</b> Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• <b>Failure Exitcode Range</b> Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• <b>Success Output Contains</b> Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• <b>Failure Output Contains</b> Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• <b>Step Conditions (z/OS only)</b> Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul>

Output Type	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>
Scan Output For	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.</p>
Output File (for <a href="#">Exit Code Processing</a> )	<p>Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.</p>
Exit Codes	<p>Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>
Automatic Output Retrieval	<p>Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None Do not attach any output to the task instance record.</li> <li>• Standard Output Attach all standard output.</li> <li>• Standard Error Attach standard error output.</li> <li>• File Attach the file specified in the <a href="#">Output File</a> field.</li> <li>• Standard Output/Error Attach all standard output and standard error output.</li> </ul>
Start Line	<p>If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated.</p> <ul style="list-style-type: none"> <li>• If a <b>Start Line</b> value is not specified, the default is 1.</li> <li>• If the <b>Start Line</b> value is -1, data will be retrieved starting at the end of the file.</li> </ul>
Number of Lines	<p>If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <a href="#">Retrieve Output Default Maximum Lines</a> Universal Controller system property.</p>
Scan Text	<p>If <a href="#">Automatic Output Retrieval</a> = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the <b>Number of Lines</b> above and below the first line matched.</p> <p>if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.</p>
Output File (for <a href="#">Automatic Output Retrieval</a> )	<p>Required if <a href="#">Automatic Output Retrieval</a> = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.</p>
<b>Retry Options</b>	<p>This section contains specifications for retrying the task.</p>

Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.
Suppress Intermediate Failures	<p>User-defined; If the task instance is in the <a href="#">Failed status</a>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p><b>Time Options</b></p>	<p>This section contains time-related specifications for the task instance.</p>
<p>Late Start</p>	<p>If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a>). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <b>Started Late</b> field; the field is checked if the instance started after the specified time. The <b>Started Late</b> field displays in the task instance Details only if the user specified a Late Start in the task Details.</p>
<p>Started Late</p>	<p>System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.</p>

Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	<p>If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.</p>
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
Finished Late	<p>System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.</p>
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
Late Finish Duration	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Finished Early	<p>System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.</p>

Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for the task instance.</p>
User Estimated End Time	<p>System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.</p>
Average Estimated End Time	<p>System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.</p>
Shortest Estimated End Time	<p>System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.</p>
Longest Estimated End Time	<p>System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.</p>
Projected End Time	<p>System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a>.</p>



<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>SAP</b>	Displays an <a href="#">Action menu</a> of SAP commands.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Output</b>	<p>Displays output generated from the process, if any, based on specifications provided by the user in the <a href="#">Automatic Output Retrieval</a> fields in the task Details.</p> <p>If automatic output retrieval was not available or was not selected, output can be obtained by clicking the <a href="#">Retrieve Output</a> button.</p>
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Output Redirection

An Agent processes SAP, Universal Command, and File Transfer/UDM task types differently than Windows and Linux/Unix task types. SAP, Universal Command, and File Transfer/UDM command lines are sent to the user process via standard input, so any redirection operators entered as task command input are not processed as expected.

If you want to direct output from an SAP task to your file system, the **-uagstdio** command option lets you specify the same output redirection commands that are available for Windows and Linux/Unix task types. UAG will apply the user-specified value for **-uagstdio** directly to the command image.

The I/O redirection commands that you can use with **-uagstdio** are dependent on the OS/command shell. You should be able to set up any redirection that the OS/command shell supports (just as with Windows and Unix/Linux task types).

The syntax of **-uagstdio** is similar to Universal Data Mover, Universal Command, and Universal Connector [command line options](#); option followed by value.

For the SAP task type, you can specify **uagstdio** in the following field:

- [SAP Command Options](#)

### -uagstdio Examples

```
-uagstdio >C:\SAPOUT\sap.out
```

If the **-uagstdio** value contains spaces, it must be enclosed in double quotation marks ( " ):

```
-uagstdio ">C:\SAPOUT\sap.out 2>C:\SAPOUT\sap.err"
```

If the quoted value itself requires double quotation marks, they must be doubled ( "" ):

```
-uagstdio ">C:\tmp\"\"sap output\""\sap.out 2>C:\tmp\"\"sap output\""\sap.err"
```

## Universal Connector Commands

The following table identifies supported Universal Connector commands, describes the actions that each command performs, and lists each command's related options, which display in the SAP Task Details when that command is selected.

Command Name	Description	Options
Run	<p>Performs the following actions:</p> <ol style="list-style-type: none"> <li>1. Defines a new SAP, job based on either a USAP Definition file or an SAP Model Job.</li> <li>2. Starts the defined job.</li> <li>3. Waits for the job to complete.</li> <li>4. Prints the job's joblog to standard error and the spoolists to standard output.</li> <li>5. Purges the job from the SAP system.</li> </ol>	<ul style="list-style-type: none"> <li>• <b>Definition or Model</b> Specifies how the new SAP job will be created, based either on a USAP Definition File or an SAP Model Job.</li> <li>• <b>Script or File System</b> Specifies whether the USAP definition file exists in the file system of the machine where the Agent is running or in <a href="#">Scripts</a>.</li> <li>• <b>Script</b> If <a href="#">Command</a> or <a href="#">Script</a> = Script; Required. Name of the <a href="#">script</a> in the Controller database that will be executed by this task.</li> <li>• <b>Definition File</b> If you selected USAP Definition File above, use this field to provide the path and file name of the file.</li> <li>• <b>SAP Job Name</b> Job name of the SAP job. <a href="#">Variables</a> supported.</li> <li>• <b>SAP Job ID</b> Job ID of the SAP job. <a href="#">Variables</a> supported.</li> </ul>

		<ul style="list-style-type: none"> <li> <b>Target Job Name</b>                      If you selected SAP Model Job above, use this field to provide the name of the new SAP job being created. If you leave this field blank, the Controller uses the same name as the SAP Model Job.                 </li> <li> <b>Start Immediately</b>                      Enabled or disabled. Enabling the Start Immediately flag will cause the job to fail if SAP resources are not available to start the job immediately (for example, a background work process). Otherwise, the job will wait for SAP resources to become available.                 </li> <li> <b>SAP Target Server</b>                      Name of an SAP instance at which a background job should be run. The name has the following format:                     <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>[host name]_[SAP System name]_[SAP System number]</pre> </div>                     Where host name is the name of the server computer on which the instance is running, as specified in the system profile parameter SAPLOCALHOST.                      Example:                     <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>hs0123_C11_55</pre> </div> </li> <li> <b>Print Application Log</b>                      Enabled or disabled. Specifies whether or not the job's application log, if one was generated, is returned.                 </li> <li> <b>Print Application RC</b>                      Enabled or disabled. Specifies whether or not the job's application return codes, if they were set, are returned.                 </li> <li> <b>Use Application RC</b>                      Specifies whether or not the SAP job's application return codes will be used to determine the return code for the Universal Controller task.                 </li> </ul>
<p>Run Process Chain</p>	<p>Performs the following actions:</p> <ol style="list-style-type: none"> <li>1. Starts a process chain.</li> <li>2. Waits for the process chain to complete.</li> <li>3. Returns the process chain log.</li> <li>4. Returns process logs.</li> <li>5. Returns process spool lists.</li> </ol>	<ul style="list-style-type: none"> <li> <b>Chain ID</b>                      ID of the process chain to run.                 </li> </ul>
<p>Run InfoPackage</p>	<p>Performs the following actions:</p> <ol style="list-style-type: none"> <li>1. Starts an InfoPackage.</li> <li>2. Wait for the InfoPackage request to complete.</li> <li>3. Returns status messages for the completed Infopackage request.</li> </ol>	<ul style="list-style-type: none"> <li> <b>InfoPackage</b>                      Name of the InfoPackage to run.                 </li> <li> <b>InfoPackage Job Name</b>                      Name of the SAP batch job that processes the InfoPackage request.                 </li> </ul>
<p>Submit</p>	<p>Defines a new SAP job.</p>	

- **Definition or Model**

Specifies how the new SAP job will be created, based either on a USAP Definition File or an SAP Model Job.

- **Script Library or File System**

Specifies whether the USAP definition file exists in the file system of the machine where the Agent is running or in [Scripts](#).

- **Script**

If [Command](#) or [Script](#) = Script; Required. Name of the [script](#) in the Controller database that will be executed by this task.

- **Definition File**

If you selected USAP Definition File above, use this field to provide the path and file name of the file.

- **SAP Job Name**

Job name of the SAP job. [Variables](#) supported.

- **SAP Job ID**

Job ID of the SAP job. [Variables](#) supported.

- **Target Job Name**

If you selected SAP Model Job above, use this field to provide the name of the new SAP job being created. If you leave this field blank, the Controller uses the same name as the SAP Model Job.

- **Start**

Enabled or disabled. Specifies whether or not the newly-defined SAP job should be started.

- **Start Immediately**

Enabled or disabled. Enabling the Start Immediately flag will cause the job to fail if SAP resources are not available to start the job immediately (for example, a background work process). Otherwise, the job will wait for SAP resources to become available.

- **SAP Target Server**

Name of an SAP instance at which a background job should be run. The name has the following format:

```
[host name]_[SAP System name]_[SAP System number]
```

Where host name is the name of the server computer on which the instance is running, as specified in the system profile parameter SAPLOCALHOST.

Example:

```
hs0123_C11_55
```

- **Wait**

Specifies whether the Controller should wait for the SAP process chain to complete processing.

		<ul style="list-style-type: none"> <li>• <b>Print Job Log</b> Enabled or disabled. Specifies whether or not the job's joblog is returned.</li> <li>• <b>Print Spooled Output</b> Enabled or disabled. Specifies whether or not the spoollists of all job steps are returned.</li> <li>• <b>Print Application Log</b> Enabled or disabled. Specifies whether or not the job's application log, if one was generated, is returned.</li> <li>• <b>Print Application RC</b> Enabled or disabled. Specifies whether or not the job's application return codes, if they were set, are returned.</li> <li>• <b>Use Application RC</b> Specifies whether or not the SAP job's application return codes will be used to determine the return code for the Universal Controller task.</li> <li>• <b>SAP ABAP Program Name</b> Name of an ABAP program in an SAP system to which the model variant belongs.</li> <li>• <b>SAP Variant Name</b> Pre-existing SAP variant name to use as the model variant.</li> <li>• <b>Target Variant Name</b> One or more replacement variants for ABAP program job steps in an SAP job.</li> </ul>
<p>Modify</p>	<p>Modifies an SAP job that already exists in an SAP system. A USAP job definition file is used to specify the modifications.</p>	<ul style="list-style-type: none"> <li>• <b>Script Library or File System</b> Specifies whether the USAP definition file exists in the file system of the machine where the Agent is running or in <a href="#">Scripts</a>.</li> <li>• <b>Script</b> If <a href="#">Command</a> or <a href="#">Script</a> = Script; Required. Name of the <a href="#">script</a> in the Controller database that will be executed by this task.</li> <li>• <b>Definition File</b> If you selected USAP Definition File above, use this field to provide the path and file name of the file.</li> <li>• <b>SAP Job ID</b> Job ID of the SAP job. <a href="#">Variables</a> supported.</li> </ul>

<p>Start</p>	<p>Starts a currently defined SAP job.</p>	<ul style="list-style-type: none"> <li>• <b>SAP Job Name</b> Job name of the SAP job. <i>Variables</i> supported.</li> <li>• <b>SAP Job ID</b> Job ID of the SAP job. <i>Variables</i> supported.</li> <li>• <b>Start Immediately</b> Enabled or disabled. Enabling the Start Immediately flag will cause the job to fail if SAP resources are not available to start the job immediately (for example, a background work process). Otherwise, the job will wait for SAP resources to become available.</li> <li>• <b>SAP Target Server</b> Name of an SAP instance at which a background job should be run. The name has the following format: <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">[host name]_[SAP System name]_[SAP System number]</div>Where host name is the name of the server computer on which the instance is running, as specified in the system profile parameter SAPLOCALHOST. Example: <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">hs0123_C11_55</div></li> <li>• <b>Wait</b> Specifies whether the Controller should wait for the SAP process chain to complete processing.</li> <li>• <b>Print Job Log</b> Enabled or disabled. Specifies whether or not the job's joblog is returned.</li> <li>• <b>Print Spooled Output</b> Enabled or disabled. Specifies whether or not the spoolists of all job steps are returned.</li> <li>• <b>Print Application Log</b> Enabled or disabled. Specifies whether or not the job's application log, if one was generated, is returned.</li> <li>• <b>Print Application RC</b> Enabled or disabled. Specifies whether or not the job's application return codes, if they were set, are returned.</li> <li>• <b>Use Application RC</b> Specifies whether or not the SAP job's application return codes will be used to determine the return code for the Universal Controller task.</li> </ul>
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<p><b>Start Process Chain</b></p>	<p>Starts the specified process chain on the SAP system.</p>	<ul style="list-style-type: none"> <li>• <b>Chain ID</b> ID of process chain to start.</li> <li>• <b>Restart</b>  Specification to restart failed and cancelled processes (R or X) in the specified process chain instance.</li> <li>• <b>Log ID</b>  Log ID for process chain instance to be restarted.</li> <li>• <b>Wait</b>  Specifies whether the Controller should wait for the SAP process chain to complete processing.</li> <li>• <b>Print Job Log</b>  Enabled or disabled. Specifies whether or not the job's joblog is returned.</li> <li>• <b>Print Spooled Output</b>  Enabled or disabled. Specifies whether or not the spoollists of all job steps are returned.</li> <li>• <b>Print Application Log</b>  Enabled or disabled. Specifies whether or not the job's application log, if one was generated, is returned.</li> <li>• <b>Print Application RC</b>  Enabled or disabled. Specifies whether or not the job's application return codes, if they were set, are returned.</li> <li>• <b>Use Application RC</b>  Specifies whether or not the SAP job's application return codes will be used to determine the return code for the Universal Controller task.</li> </ul>
<p><b>Start InfoPackage</b></p>	<p>Starts the specified InfoPackage on the SAP system.</p>	<ul style="list-style-type: none"> <li>• <b>InfoPackage</b> Name of the InfoPackage to start.</li> <li>• <b>InfoPackage Job Name</b>  Name of the SAP batch job that processes the InfoPackage request.</li> <li>• <b>Wait</b>  Specifies whether the Controller should wait for the SAP InfoPackage to complete processing.</li> </ul>

Wait	Reconnects to a started job and monitors it through completion.	<ul style="list-style-type: none"> <li>• <b>SAP Job Name</b> Job name of the SAP job. <i>Variables</i> supported.</li> <li>• <b>SAP Job ID</b> Job ID of the SAP job. <i>Variables</i> supported.</li> <li>• <b>Print Job Log</b> Enabled or disabled. Specifies whether or not the job's joblog is returned.</li> <li>• <b>Print Spooled Output</b> Enabled or disabled. Specifies whether or not the spoolists of all job steps are returned.</li> <li>• <b>Print Application Log</b> Enabled or disabled. Specifies whether or not the job's application log, if one was generated, is returned.</li> <li>• <b>Print Application RC</b> Enabled or disabled. Specifies whether or not the job's application return codes, if they were set, are returned.</li> <li>• <b>Use Application RC</b> Specifies whether or not the SAP job's application return codes will be used to determine the return code for the Universal Controller task.</li> </ul>
Wait Process Chain	Waits for a Process Chain to complete.	<ul style="list-style-type: none"> <li>• <b>Chain ID</b> ID of process chain to be monitored to completion.</li> <li>• <b>Log ID</b> Log ID for process chain instance to be monitored to completion.</li> </ul>
Wait InfoPackage	Waits for an InfoPackage to complete.	<ul style="list-style-type: none"> <li>• <b>Request ID</b> Request ID of the InfoPackage that is to be monitored.</li> </ul>
Abort	Cancels a running SAP job.	<ul style="list-style-type: none"> <li>• <b>SAP Job Name</b> Job name of the SAP job. <i>Variables</i> supported.</li> <li>• <b>SAP Job ID</b> Job ID of the SAP job. <i>Variables</i> supported.</li> </ul>
Interrupt Process Chain	Removes the specified process chain from the schedule.	<ul style="list-style-type: none"> <li>• <b>Chain ID</b> ID of process chain that is to be interrupted.</li> </ul>
Purge Job	Deletes a defined SAP job, its joblog, and all of its spoolists. This command is not available on SAP 3.1 and SAP 4.0.	<ul style="list-style-type: none"> <li>• <b>SAP Job Name</b> Job name of the SAP job. <i>Variables</i> supported.</li> <li>• <b>SAP Job ID</b> Job ID of the SAP job. <i>Variables</i> supported.</li> </ul>



Purge Variant	Deletes a variant from an SAP system.	<ul style="list-style-type: none"> <li>• <b>SAP ABAP Program Name</b> Name of the ABAP program for which the variant will be deleted.</li> <li>• <b>SAP Variant Name</b> Name of the variant to be deleted.</li> </ul>																														
Raise Event	Raises the specified SAP background processing event.	<ul style="list-style-type: none"> <li>• <b>SAP Event</b> Name of the event.</li> <li>• <b>SAP Event Parameter</b> Optional parameter value for the event.</li> </ul>																														
Display	Displays the data specified in the Display Command field. The data is written to standard output.	<ul style="list-style-type: none"> <li>• <b>Display Command</b> One of the following:</li> </ul> <table border="1" data-bbox="922 737 1484 1896"> <tr> <td>Job Log</td> <td>Displays the job log for a specified SAP job.</td> </tr> <tr> <td>Spool List</td> <td>Displays the spoolist for a job step.</td> </tr> <tr> <td>Status</td> <td>Displays the current status for an SAP job.</td> </tr> <tr> <td>Variants</td> <td>Displays the variants available for the specified ABAP program.</td> </tr> <tr> <td>Variant</td> <td>Displays the contents of a specified variant. <b>Note:</b> Requires XBP interface 2.0 or greater.</td> </tr> <tr> <td>Job Definition</td> <td>Displays the definition of the specified SAP job.</td> </tr> <tr> <td>Select</td> <td>Displays a variety of attributes for a list of SAP jobs that match the specified criteria.</td> </tr> <tr> <td>System Log</td> <td>Displays a portion of an SAP syslog that meets the specified date/time constraints.</td> </tr> <tr> <td>Intercept Table</td> <td>Displays the contents of the job intercept criteria table for the connected SAP system.</td> </tr> <tr> <td>Intercepted Jobs</td> <td>Displays intercepted jobs for the connected SAP system.</td> </tr> <tr> <td>Reports</td> <td>Displays a list of ABAP reports that match the specified criteria.</td> </tr> <tr> <td>Commands</td> <td>Displays a list of SAP external commands that match the specified criteria.</td> </tr> <tr> <td>Output Devices</td> <td>Displays a list of SAP output devices that match the specified criteria.</td> </tr> <tr> <td>Print Formats</td> <td>Displays a list of print formats that are available for the specified printer.</td> </tr> <tr> <td>Selection Screen</td> <td>Displays information about the selection fields of an ABAP program.</td> </tr> </table>	Job Log	Displays the job log for a specified SAP job.	Spool List	Displays the spoolist for a job step.	Status	Displays the current status for an SAP job.	Variants	Displays the variants available for the specified ABAP program.	Variant	Displays the contents of a specified variant. <b>Note:</b> Requires XBP interface 2.0 or greater.	Job Definition	Displays the definition of the specified SAP job.	Select	Displays a variety of attributes for a list of SAP jobs that match the specified criteria.	System Log	Displays a portion of an SAP syslog that meets the specified date/time constraints.	Intercept Table	Displays the contents of the job intercept criteria table for the connected SAP system.	Intercepted Jobs	Displays intercepted jobs for the connected SAP system.	Reports	Displays a list of ABAP reports that match the specified criteria.	Commands	Displays a list of SAP external commands that match the specified criteria.	Output Devices	Displays a list of SAP output devices that match the specified criteria.	Print Formats	Displays a list of print formats that are available for the specified printer.	Selection Screen	Displays information about the selection fields of an ABAP program.
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		<table border="1"> <tr> <td data-bbox="922 128 1068 243">Event History</td> <td data-bbox="1068 128 1487 243">Displays a list of events that were logged in an SAP system's event history. The retrieved events can optionally be set to "Confirmed."</td> </tr> <tr> <td data-bbox="922 243 1068 338">Criteria Manager Profiles</td> <td data-bbox="1068 243 1487 338">Displays a list of Criteria Manager profiles.</td> </tr> <tr> <td data-bbox="922 338 1068 432">Criteria Manager Criteria</td> <td data-bbox="1068 338 1487 432">Displays the criteria hierarchy of a particular profile in XML format.</td> </tr> <tr> <td data-bbox="922 432 1068 527">Process Chains</td> <td data-bbox="1068 432 1487 527">Displays a list of process chains from the SAP system that meet the specified criteria.</td> </tr> <tr> <td data-bbox="922 527 1068 600">Process Chain</td> <td data-bbox="1068 527 1487 600">Displays the list of processes contained within the specified process chain.</td> </tr> <tr> <td data-bbox="922 600 1068 674">Process Chain Log</td> <td data-bbox="1068 600 1487 674">Displays the SAP log associated with the process chain.</td> </tr> <tr> <td data-bbox="922 674 1068 768">Process Chain Start Condition</td> <td data-bbox="1068 674 1487 768">Displays the SAP start condition for specified process chain.</td> </tr> <tr> <td data-bbox="922 768 1068 842">Process Chain Status</td> <td data-bbox="1068 768 1487 842">Displays the current status of the process chain.</td> </tr> <tr> <td data-bbox="922 842 1068 936">InfoPackages</td> <td data-bbox="1068 842 1487 936">Displays a list of InfoPackages on the SAP system that meet the specified criteria.</td> </tr> <tr> <td data-bbox="922 936 1068 1031">InfoPackage Status</td> <td data-bbox="1068 936 1487 1031">Displays the current status for the InfoPackage instance identified by the request ID.</td> </tr> </table>	Event History	Displays a list of events that were logged in an SAP system's event history. The retrieved events can optionally be set to "Confirmed."	Criteria Manager Profiles	Displays a list of Criteria Manager profiles.	Criteria Manager Criteria	Displays the criteria hierarchy of a particular profile in XML format.	Process Chains	Displays a list of process chains from the SAP system that meet the specified criteria.	Process Chain	Displays the list of processes contained within the specified process chain.	Process Chain Log	Displays the SAP log associated with the process chain.	Process Chain Start Condition	Displays the SAP start condition for specified process chain.	Process Chain Status	Displays the current status of the process chain.	InfoPackages	Displays a list of InfoPackages on the SAP system that meet the specified criteria.	InfoPackage Status	Displays the current status for the InfoPackage instance identified by the request ID.
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<p><a href="#">Generate Variant Definition</a></p>	<p>Generates a USAP variant definition file based on a model SAP variant. The generated definition file is written to standard output. Requires XBP interface 2.0 or greater.</p>	<ul style="list-style-type: none"> <li> <b>SAP ABAP Program Name</b>                      Name of an ABAP program in an SAP system to which the model variant belongs.                 </li> <li> <b>SAP Variant Name</b>                      Pre-existing SAP variant name to use as the model variant.                 </li> </ul>																				
<p><a href="#">Generate Job Definition</a></p>	<p>Generates a USAP job definition file based on a model SAP job. The generated definition file is written to standard output.</p>	<ul style="list-style-type: none"> <li> <b>SAP Job Name</b>                      Job name of the SAP job. <i>Variables</i> supported.                 </li> <li> <b>SAP Job ID</b>                      Job ID of the SAP job. <i>Variables</i> supported.                 </li> </ul>																				

<p>Create CM Profile</p>	<p>Creates a new Criteria Manager profile.</p>	<ul style="list-style-type: none"> <li>• <b>Script Library or File System</b> Specifies whether the USAP definition file exists in the file system of the machine where the Agent is running or in <a href="#">Scripts</a>.</li> <li>• <b>Script</b> If <a href="#">Command</a> or <a href="#">Script</a> = Script; Required. Name of the <a href="#">script</a> in the Controller database that will be executed by this task.</li> <li>• <b>SAP Criteria Manager XML File</b> Name of the file that contains the Criteria Manager information.</li> <li>• <b>Event Select State</b> Event status of the events which should be read.</li> <li>• <b>SAP Event</b> Name of the event.</li> <li>• <b>SAP Event Parameter</b> Optional parameter value for the event.</li> <li>• <b>Confirm Returned Events</b> Specification for whether or not the status of returned events should be changed in the SAP system.</li> </ul>
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<p>Set CM Criteria</p>	<p>Sets the criteria for a profile.</p>	<ul style="list-style-type: none"> <li>• <b>Script Library or File System</b> Specifies whether the USAP definition file exists in the file system of the machine where the Agent is running or in <a href="#">Scripts</a>.</li> <li>• <b>Script</b> If <a href="#">Command</a> or <a href="#">Script</a> = Script; Required. Name of the <a href="#">script</a> in the Controller database that will be executed by this task.</li> <li>• <b>SAP Criteria Manager XML File</b> Name of the file that contains the Criteria Manager information.</li> <li>• <b>SAP Criteria Manager Profile ID</b> ID of the profile.</li> <li>• <b>SAP Criteria Manager Profile Type</b> Type of profile. For the default criteria types provided by SAP, the values are: <ul style="list-style-type: none"> <li>• <b>EVTHIS</b> - Identifies a criteria type for event history.</li> <li>• <b>EVHIRO</b> - Identifies a criteria type for the reorganization of raised events.</li> <li>• <b>INTERC</b> - Identifies a criteria type for job interception.</li> </ul> </li> <li>• <b>Event Select State</b> Event status of the events which should be read.</li> <li>• <b>SAP Event</b> Name of the event.</li> <li>• <b>SAP Event Parameter</b> Optional parameter value for the event.</li> <li>• <b>Confirm Returned Events</b> Specification for whether or not the status of returned events should be changed in the SAP system.</li> </ul>
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<p>Activate CM Profile</p>	<p>Activates a criteria profile of the specified type.</p>	<ul style="list-style-type: none"> <li>• <b>SAP Criteria Manager Profile ID</b> ID of the profile.</li> <li>• <b>SAP Criteria Manager Profile Type</b> Type of profile. For the default criteria types provided by SAP, the values are: <ul style="list-style-type: none"> <li>• <b>EVTHIS</b> - Identifies a criteria type for event history.</li> <li>• <b>EVHIRO</b> - Identifies a criteria type for the reorganization of raised events.</li> <li>• <b>INTERC</b> - Identifies a criteria type for job interception.</li> </ul> </li> <li>• <b>Event Select State</b> Event status of the events which should be read.</li> <li>• <b>SAP Event</b> Name of the event.</li> <li>• <b>SAP Event Parameter</b> Optional parameter value for the event.</li> <li>• <b>Confirm Returned Events</b> Specification for whether or not the status of returned events should be changed in the SAP system.</li> </ul>
<p>Deactivate CM Profile</p>	<p>Deactivates a criteria profile of the specified type.</p>	<ul style="list-style-type: none"> <li>• <b>SAP Criteria Manager Profile Type</b> Type of profile. For the default criteria types provided by SAP, the values are: <ul style="list-style-type: none"> <li>• <b>EVTHIS</b> - Identifies a criteria type for event history.</li> <li>• <b>EVHIRO</b> - Identifies a criteria type for the reorganization of raised events.</li> <li>• <b>INTERC</b> - Identifies a criteria type for job interception.</li> </ul> </li> <li>• <b>Event Select State</b> Event status of the events which should be read.</li> <li>• <b>SAP Event</b> Name of the event.</li> <li>• <b>SAP Event Parameter</b> Optional parameter value for the event.</li> <li>• <b>Confirm Returned Events</b> Specification for whether or not the status of returned events should be changed in the SAP system.</li> </ul>

<p>Delete CM Profile</p>	<p>Deletes a criteria profile from an SAP system.</p>	<ul style="list-style-type: none"> <li>• <b>SAP Criteria Manager Profile ID</b> ID of the profile.</li> <li>• <b>SAP Criteria Manager Profile Type</b> Type of profile. For the default criteria types provided by SAP, the values are: <ul style="list-style-type: none"> <li>• <b>EVTHIS</b> - Identifies a criteria type for event history.</li> <li>• <b>EVHIRO</b> - Identifies a criteria type for the reorganization of raised events.</li> <li>• <b>INTERC</b> - Identifies a criteria type for job interception.</li> </ul> </li> <li>• <b>Event Select State</b> Event status of the events which should be read.</li> <li>• <b>SAP Event</b> Name of the event.</li> <li>• <b>SAP Event Parameter</b> Optional parameter value for the event.</li> <li>• <b>Confirm Returned Events</b> Specification for whether or not the status of returned events should be changed in the SAP system.</li> </ul>
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## Running an SAP Task

You can run an SAP task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the SAP tasks list or SAP Task Details [Action menu](#).
- As part of a [workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## File Transfer Task

- Overview
- Built-In Variables
- Creating a File Transfer Task
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### Overview

The File Transfer task allows you to execute file transfers on remote machines using any of the following protocols:

- FTP
- SFTP
- UDM

To run a File Transfer task, you need Universal Agent for Linux/Unix, z/OS, or Windows to communicate with the File Transfer server. The Agent can, but does not have to be, running on the same machine as the File Transfer server.

The following examples provide sample configurations for executing file transfers using a File Transfer task.

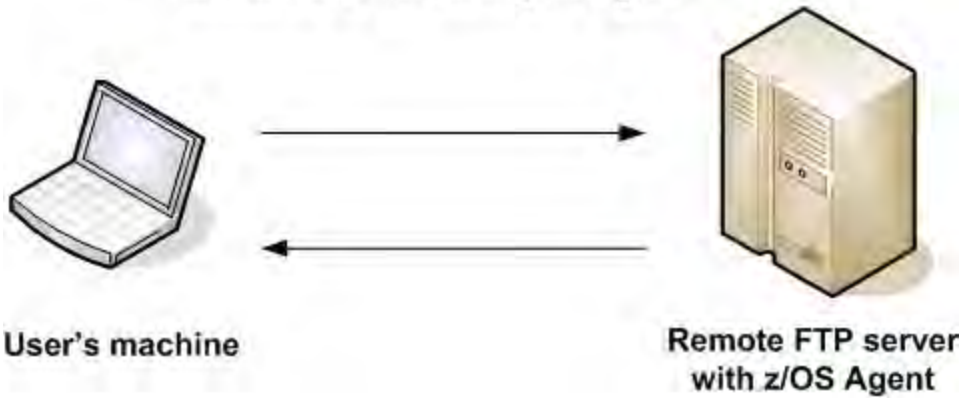
In the first example, the user wants to transfer a file from a remote File Transfer Server on a machine that does not have an Agent running on it. In this case, the File Transfer task definition provides an address and login credentials for the machine where the Agent is running as well as address and login credentials for the machine where the File Transfer server is running.

**Example 1:  
User wants to transfer a file from a remote machine that is not running an Agent.**



In the second example, the user wants to transfer a file from a remote File Transfer Server on a z/OS machine that does have an Agent running on it. In this case, the login credentials for the Agent machine and the File Transfer server machine are the same.

**Example 2:**  
**User wants to transfer a file from a remote machine that is running an Agent.**



**Built-In Variables**

The following built-in variables can be used in a File Transfer task to pass data where appropriate:

- Task Instance variables
- Agent-Based Task Instance variables
- File Transfer Task variables

**Creating a File Transfer Task**

**Step 1** From the Automation Center navigation pane, select **Tasks > File Transfer Tasks**. The File Transfer Tasks list displays a list of all currently defined File Transfer tasks.

Below the list, File Transfer Task Details for a new File Transfer task displays.

The screenshot shows the "File Transfer Tasks" interface. At the top, there is a list of five tasks:

Task Name	Task Description	Transfer Protocol	Updated By	Updated
stonebranch-filetransfertask-01		FTP	ops.admin	2015-11-23 11:25:46 -0500
stonebranch-filetransfertask-02		UDM	ops.admin	2015-06-12 09:30:05 -0400
stonebranch-filetransfertask-03		FTP	ops.admin	2016-04-15 17:02:54 -0400
stonebranch-filetransfertask-04		FTP	ops.admin	2014-06-13 14:10:09 -0400
stonebranch-filetransfertask-05		UDM	ops.admin	2015-06-08 10:20:22 -0400

Below the list is the "File Transfer Task Details" form, which includes the following sections:

- General:** Fields for Task Name, Task Description, Member of Business, Services, Hold on Start, Virtual Resource Priority (set to 10), and Hold Resources on Failure.
- File Transfer Details:** Fields for Transfer Protocol (set to FTP), Command (set to GET), Job Card (z/OS only), and Subcommands (z/OS only).



<b>Step 2</b>	<p>Enter/select Details for a new File Transfer task, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> <li>• Required fields display in <b>boldface</b>.</li> <li>• Default values for fields, if available, display automatically.</li> </ul> <p>To display more of the Details fields on the screen, you can either:</p> <ul style="list-style-type: none"> <li>• Use the scroll bar.</li> <li>• Temporarily <a href="#">hide the list</a> above the Details.</li> <li>• Click the <b>New</b> button above the list to display a pop-up version of the Details.</li> </ul>
<b>Step 3</b>	Click the <b>Save</b> button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

**Note**

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## File Transfer Protocols

When you create a File Transfer task, you select a file transfer protocol: FTP, SFTP, or UDM.

The Details for [FTP and SFTP transfer protocols](#) are the same; the Details for the [UDM transfer protocol](#) differs considerably.

Using **SFTP** requires that you supply a valid [credential](#) that specifies the location of the SSL Private key on your Agent. In the Credentials Details, you supply the location for the private key in the field "Key Location (File Transfer only)". This location must exist on the Agent where you intend to run the SFTP task.

Make sure you have your private/public keys properly set up and working before you configure the Controller to use it. For example, to validate the keys, log into your destination server from your agent server using ssh.

## FTP/SFTP File Transfer Task Details

The following FTP/SFTP File Transfer Task Details is for an existing FTP/SFTP File Transfer task.



Depending on the values that you enter / select for these fields, and whether or not the FTP/SFTP File Transfer task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the FTP/SFTP File Transfer Task Details.



### FTP/SFTP File Transfer Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in FTP/SFTP File Transfer Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <i>variables</i> supported. It is the responsibility of the user to develop a workable <i>naming scheme</i> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <i>Versions</i> tab to view previous versions. For details, see <i>Record Versioning</i> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)

Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>File Transfer Details</b>	This section contains assorted detailed information about the task.
Transfer Protocol	Type of transfer protocol for this file transfer.  Options: <ul style="list-style-type: none"> <li>• FTP</li> <li>• SFTP</li> <li>• UDM</li> </ul>
Command	File Transfer command being executed.  Options: <ul style="list-style-type: none"> <li>• GET - Copies a remote file to the local computer.</li> <li>• PUT - Copies a local file to the remote computer.</li> <li>• MGET - Copies multiple remote files to the local computer.</li> <li>• MPUT - Copies multiple local files to the remote computer.</li> <li>• DELETE - Deletes the specified file from the remote computer.</li> <li>• MDELETE - Deletes the specified file(s) from the remote computer</li> <li>• MKDIR - Creates the specified directory on the remote computer.</li> <li>• RMDIR - Removes the specified directory from the remote computer.</li> </ul>
Job Card (z/OS only)	For z/OS, the job card information for the JCL statement. Example: <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>//File TransferJOB01 JOB (File Transfer,001),FANNY,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&amp;SYSUID,CLASS=A</pre> </div>
Subcommands (z/OS only)	For z/OS, any subcommands used in the JCL statement.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .

<p>Agent Variable</p>	<p>Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
<p>Transfer Type</p>	<p>Data format of the file being transferred.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Binary</li> <li>• ASCII</li> </ul>
<p>Transfer Mode</p>	<p>Transfer mode.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Active</li> <li>• Passive</li> <li>• Extended Passive</li> </ul>
<p>Agent Cluster</p>	<p>Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.</p>
<p>Agent Cluster Variable</p>	<p>Indication of whether the <a href="#">Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
<p>Cluster Broadcast</p>	<p>Group of Agents, all of which will run this task (compare with Agent Cluster). You can specify a Cluster Broadcast in place of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.</p>
<p>Remote Server</p>	<p>Required if <a href="#">Transfer Protocol</a> = FTP or SFTP; name or IP address of the File Transfer server. This machine may or may not be the same as the Agent machine.</p> <p>You also can specify a non-standard FTP or SFTP port:</p> <ul style="list-style-type: none"> <li>• For FTP, specify the port number separated from the host name with a space: "some.server.com 2222".</li> <li>• For SFTP, specify the port number separated from the host name with a colon: "some.server.com:2222".</li> </ul>


FTP Credentials	Login credentials that the Agent will use to access the FTP or SFTP server machine. If the File Transfer server and Agent are running on the same machine, enter the same credentials as those you entered in the Credentials field.
FTP Credentials Variable	<p>Indication of whether the <a href="#">FTP Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">FTP Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an FTP Credentials reference to using an FTP Credentials variable, you must change the <b>FTP Credentials Variable</b> field to <b>Yes</b> and specify the FTP Credentials variable in the <b>FTP Credentials Unresolved</b> field. Conversely, to change from using an FTP Credentials variable to using an FTP Credentials reference, you must change the <b>FTP Credentials Variable</b> field to <b>No</b> and specify the FTP Credentials reference in the <b>FTP Credentials</b> field.</p> </div>
Credentials	<a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.
Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Local Filename	Required if <a href="#">Transfer Type</a> = FTP or SFTP; path and file name on the local server. That is, the "transfer from" file name.
Use Regular Expression	Enables the use of a <a href="#">regular expression</a> in the <a href="#">Local Filename</a> field.
Remote Filename	Required if <a href="#">Transfer Type</a> = FTP or SFTP; path and file name on the remote server. That is, the "transfer to" file name.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.

<p>Suppress Intermediate Failures</p>	<p>User-defined; If the task instance is in the <b>Failed status</b>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <b>Maximum Retries</b> value has been entered or <b>Retry Indefinitely</b> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<b>Abort</b>, <b>Email Notification</b>, <b>Set Variable</b>, <b>SNMP Notification</b>, and <b>System Operation</b>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <b>Task Monitor</b> task that has a <b>Time Scope</b> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <b>Running/Problems</b> status.</li> </ul>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>

Wait Duration In Seconds	If <a href="#">Wait To Start</a> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
Workflow Only	<p>Specification for whether or not to apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• -- System Default -- Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications as defined by the <a href="#">System Default Wait/Delay Workflow Only</a> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</li> <li>• No Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications whether or not the task is in a Workflow.</li> </ul>
<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>

Late Finish	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
Late Finish Duration	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>



<p>CP Duration Unit</p>	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<p><b>Statistics</b></p>	<p>This section contains time-related statistics for task instances of the task.</p>
<p>First Time Ran</p>	<p>System-supplied; date and time this task first ran.</p>
<p>Last Time Ran</p>	<p>System-supplied; date and time the task last ran.</p>
<p>Last Instance Duration</p>	<p>System-supplied; amount of time the task took to run the last time it ran.</p>
<p>Lowest Instance Time</p>	<p>System-supplied; shortest amount of time this task has taken to run.</p>
<p>Average Instance Time</p>	<p>System-supplied; average amount of time this task takes to run.</p>
<p>Highest Instance Time</p>	<p>System-supplied; longest amount of time this task has taken to run.</p>
<p>Number of Instances</p>	<p>System-supplied; number of instances in the database for this task.</p>
<p><b>Buttons</b></p>	<p>This section identifies the buttons displayed above and below the Task Details that let you perform various actions.</p>
<p><b>Save</b></p>	<p>Saves a new task record in the Controller database.</p>
<p><b>Update</b></p>	<p>Saves updates to the record.</p>
<p><b>New</b></p>	<p>Displays empty (except for default values) Details for creating a new task.</p>
<p><b>Launch Task</b></p>	<p>Manually launches the task.</p>
<p><b>View Parents</b></p>	<p>Displays a list of any parent Workflow tasks for this task.</p>
<p><b>Copy</b></p>	<p>Creates a copy of this task, which you are prompted to rename.</p>
<p><b>Delete</b></p>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>• Specified in an enabled Trigger.</li> <li>• The only task specified in a disabled Trigger.</li> </ul> </div>

<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.										
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.										
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.										
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.										
<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1"> <tr> <td><b>Abort Action</b></td> <td>Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td><b>Email Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td><b>Set Variable</b></td> <td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td><b>SNMP Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td><b>System Operation</b></td> <td>Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
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<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of the task.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## UDM File Transfer Task Details

The following UDM File Transfer Task Details is for an existing UDM File Transfer task.

Depending on the values that you enter / select for these fields, and whether or not the UDM File Transfer task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the UDM File Transfer Task Details.

File Transfer Task Details: stonebranch-filetransfertask-01

Update Launch Task View Parents Copy Delete Refresh Close

File Transfer Task Variables Actions Virtual Resources Mutually Exclusive Instances Triggers Notes Versions

**General**

Task Name: stonebranch-filetransfertask-01 Version: 3

Task Description:

Member of Business Services:

Hold on Start:

Virtual Resource Priority: 10 Hold Resources on Failure:

**File Transfer Details**

Transfer Protocol: UDM

Utility Agent: agent1 Transfer Type: Binary

Utility Agent Variable:  Encrypt: NO

Utility Agent Cluster:  Compress: NO

Utility Agent Cluster Variable:  Codepage: -- None --

Utility Credentials:  File Creation Option: -- None --

Utility Credentials Variable:  Trim Trailing Spaces:

Runtime Directory:

Network Fault Tolerant:

Form or Script: Form

Source Filename(s): file 1 Destination Filename(s): file 2

Use Regular Expression:

Source File System: -- None -- Destination File System: -- None --

Source UDM Agent:  Destination UDM Agent:

Source UDM Agent Option: UDM Agent Destination UDM Agent Option: UDM Agent

Source Credentials:  Destination Credentials:

Source Credentials Variable:  Destination Credentials Variable:

Append Source Open Options:

Destination Open Options:

Append UDM Options:

Exit Code Processing: Success Exitcode Range

Exit Codes: 0

**Retry Options**

Retry Exit Codes:

Maximum Retries: 0 Retry Indefinitely:

Retry Interval (Seconds): 60 Suppress Intermediate Failures:

**Wait/Delay Options**

Wait To Start: -- None --

Delay On Start: -- None --

Workflow Only: -- System Default --

**Time Options**

Late Start:

Late Finish:

Early Finish:

User Estimated Duration: Day Hour Min Sec




**Critical Path Options**

CP Duration: CP Duration Unit: Minutes

### UDM File Transfer Task Details Field Descriptions



The following table describes the fields, buttons, and tabs that display in UDM File Transfer Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions tab</a> to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>File Transfer Details</b>	This section contains assorted detailed information about the task.
Transfer Protocol	Type of transfer protocol for this file transfer.  Options: <ul style="list-style-type: none"> <li>• FTP</li> <li>• SFTP</li> <li>• UDM</li> </ul>
Utility Agent	Name of the Windows or Linux/Unix Agent resource that will communicate with the Universal Command Agent. If you do not specify an Agent, you must specify an <a href="#">agent cluster</a> .

<p>Utility Agent Variable</p>	<p>If enabled, the <a href="#">Utility Agent</a> field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent reference to using a Utility Agent variable, you must change the <b>Utility Agent Variable</b> field to <b>Yes</b> and specify the Utility Agent variable in the <b>Utility Agent Unresolved</b> field. Conversely, to change from using a Utility Agent variable to using a Utility Agent reference, you must change the <b>Utility Agent Variable</b> field to <b>No</b> and specify the Utility Agent reference in the <b>Utility Agent</b> field.</p> </div>
<p>Utility Agent Cluster</p>	<p>Group of Agents, one of which the Controller will choose to run this task. You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific Agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.</p>
<p>Utility Agent Cluster Variable</p>	<p>Indication of whether the <a href="#">Utility Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Utility Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent Cluster reference to using a Utility Agent Cluster variable, you must change the <b>Utility Agent Cluster Variable</b> field to <b>Yes</b> and specify the Utility Agent Cluster variable in the <b>Utility Agent Cluster Unresolved</b> field. Conversely, to change from using a Utility Agent Cluster variable to using a Utility Agent Cluster reference, you must change the <b>Utility Agent Cluster Variable</b> field to <b>No</b> and specify the Utility Agent Cluster reference in the <b>Utility Agent Cluster</b> field.</p> </div>
<p>Utility Credentials</p>	<p>Login credentials that the Agent will use to access the Universal Command server machine.</p>
<p>Utility Credentials Variable</p>	<p>Indication of whether the <a href="#">Utility Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Utility Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Credentials reference to using a Utility Credentials variable, you must change the <b>Utility Credentials Variable</b> field to <b>Yes</b> and specify the Utility Credentials variable in the <b>Utility Credentials Unresolved</b> field. Conversely, to change from using a Utility Credentials variable to using a Utility Credentials reference, you must change the <b>Utility Credentials Variable</b> field to <b>No</b> and specify the Utility Credentials reference in the <b>Utility Credentials</b> field.</p> </div>
<p>Transfer Type</p>	<p>Type of data transfer.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Binary</li> <li>• Text</li> </ul>

Encrypt	<p>The method of encryption that the Controller will use in the transfer.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• YES</li> <li>• NO (none)</li> <li>• RC4-SHA</li> <li>• RC4-MD5</li> <li>• AES256-SHA</li> <li>• AES128-SHA</li> <li>• DES-CBC3-SHA</li> <li>• DES-CBC-SHA</li> <li>• NULL-SHA</li> <li>• NULL-MD5</li> <li>• NULL-NULL</li> <li>• AES256-GCM-SHA384</li> <li>• AES128-GCM-SHA256</li> </ul>
Compress	<p>The type of data compression used in the transfer, if any.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• YES</li> <li>• NO</li> <li>• ZLIB</li> <li>• HASP</li> </ul>
Codepage	<p>Options:</p> <p>(See <a href="#">Code Pages</a>, below.)</p>
File Creation Option	<p>Specifies whether the transferred file should be created (new), appended, or replace any existing file.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• APPEND</li> <li>• NEW</li> <li>• REPLACE</li> </ul>
Trim Trailing Spaces	<p>If enabled, specifies that the Controller should trim trailing spaces from lines on a text transfer.</p>
Network Fault Tolerant	<p>Enable if the session is network fault tolerant.</p>
Runtime Directory	<p>Directory from which the application should be executed. <a href="#">Variables</a> supported.</p>
Form or Script	<p>Form or Script for this UDM File Transfer to use.</p>
Source Filename(s)	<p>Required; Path and file name on the source UDM server.</p>
Use Regular Expression	<p>Enables the use of a <a href="#">regular expression</a> in the <a href="#">Source Filename(s)</a> field.</p>
Destination Filename(s)	<p>Required; Path and file name on the destination UDM server.</p>

Source File System	Type of file system on the source server.  Options: <ul style="list-style-type: none"> <li>• None</li> <li>• DSN</li> <li>• HFS</li> <li>• LIB</li> </ul>
Destination File System	Type of file system on the destination server.  Options: <ul style="list-style-type: none"> <li>• None</li> <li>• DSN</li> <li>• HFS</li> <li>• LIB</li> </ul>
Source UDM Agent	Required; Name of the Agent resource defined in the Controller that describes the source UDM Agent machine (primary transfer server).
Destination UDM Agent	Required; Name of the Agent resource defined in the Controller that provides details about the destination UDM Agent machine (secondary transfer server).
Source UDM Agent Option	Defines how you will specify the Source UDM Agent.  Options: <ul style="list-style-type: none"> <li>• UDM Agent - Source Agent is a UDM Agent defined in the Controller.</li> <li>• UDM Agent Variable - Source Agent will be defined by setting the variable in the <a href="#">Source UDM Agent</a> field.</li> <li>• UDM Agent Hostname - Source Agent runs on the host name specified in the <a href="#">Source UDM Agent</a> field.</li> </ul>
Destination UDM Agent Option	Defines how you will specify the Destination UDM Agent.  Options: <ul style="list-style-type: none"> <li>• UDM Agent - Destination Agent is an UDM Agent defined in the Controller.</li> <li>• UDM Agent Variable - Destination Agent will be defined by setting the variable in the <a href="#">Destination UDM Agent</a> field.</li> <li>• UDM Agent Hostname - Destination Agent runs on the host name specified in the <a href="#">Destination UDM Agent</a> field.</li> </ul>
Script	Name of the Script to execute for this File Transfer task.
Source Credentials	Specifies the source user ID and password (local to the host on which the server is running) under which the transfer operation is being carried out.
Destination Credentials	Specifies the destination user ID and password (local to the host on which the server is running) under which the transfer operation is being carried out.

<p>Source Credentials Variable</p>	<p>Indication of whether the <a href="#">Source Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Source Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Source Credentials reference to using a Source Credentials variable, you must change the <b>Source Credentials Variable</b> field to <b>Yes</b> and specify the Source Credentials variable in the <b>Source Credentials Unresolved</b> field. Conversely, to change from using a Source Credentials variable to using a Source Credentials reference, you must change the <b>Source Credentials Variable</b> field to <b>No</b> and specify the Source Credentials reference in the <b>Source Credentials</b> field.</p> </div>
<p>Destination Credentials Variable</p>	<p>Indication of whether the <a href="#">Destination Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Destination Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Destination Credentials reference to using a Destination Credentials variable, you must change the <b>Destination Credentials Variable</b> field to <b>Yes</b> and specify the Destination Credentials variable in the <b>Destination Credentials Unresolved</b> field. Conversely, to change from using a Destination Credentials variable to using a Destination Credentials reference, you must change the <b>Destination Credentials Variable</b> field to <b>No</b> and specify the Destination Credentials reference in the <b>Destination Credentials</b> field.</p> </div>
<p>Append Source Open Options</p>	<p>Any additional free form open command options for the source (primary) transfer server.</p>
<p>Append Destination Open Option</p>	<p>Any additional free form open command options for the destination (secondary) transfer server.</p>
<p>Append UDM Options</p>	<p>Any additional free form Universal Data Mover command options.</p>
<p>Exit Code Processing</p>	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Success Exitcode Range</b> Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• <b>Failure Exitcode Range</b> Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• <b>Success Output Contains</b> Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• <b>Failure Output Contains</b> Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• <b>Step Conditions (z/OS only)</b> Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul>
<p>Output Type-Exit Code</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>



Exit Codes	Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Scan Output For	Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File-Exit Codes	Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the <a href="#">Exit Codes</a> field. <a href="#">Maximum Retries</a> must be greater than 0.  If this field is empty, any exit code potentially will cause a retry.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Suppress Intermediate Failures	User-defined; If the task instance is in the <a href="#">Failed status</a> , indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made: <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched.  Options are: <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p>Workflow Only</p>	<p>Specification for whether or not to apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• - - System Default - - Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications as defined by the <b>System Default Wait/Delay Workflow Only</b> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</li> <li>• No Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications whether or not the task is in a Workflow.</li> </ul>

<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a> ). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.

Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for task instances of the task.</p>
First Time Ran	<p>System-supplied; date and time this task first ran.</p>
Last Time Ran	<p>System-supplied; date and time the task last ran.</p>
Last Instance Duration	<p>System-supplied; amount of time the task took to run the last time it ran.</p>
Lowest Instance Time	<p>System-supplied; shortest amount of time this task has taken to run.</p>

<b>Average Instance Time</b>	System-supplied; average amount of time this task takes to run.										
<b>Highest Instance Time</b>	System-supplied; longest amount of time this task has taken to run.										
<b>Number of Instances</b>	System-supplied; number of instances in the database for this task.										
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.										
<b>Save</b>	Saves a new task record in the Controller database.										
<b>Update</b>	Saves updates to the record.										
<b>New</b>	Displays empty (except for default values) Details for creating a new task.										
<b>Launch Task</b>	Manually launches the task.										
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.										
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.										
<b>Delete</b>	Deletes the current record.										
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.										
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.										
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.										
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.										
<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><b>Abort Action</b></td> <td>Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td><b>Email Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td><b>Set Variable</b></td> <td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td><b>SNMP Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td><b>System Operation</b></td> <td>Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
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<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										

<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.
<b>Instances</b>	Lists all instances of the task.
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .

## Viewing a File Transfer Task Instance

When a File Transfer task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [FTP/SFTP](#) or [UDM File Transfer Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

### FTP/SFTP File Transfer Task Instance Details

The following FTP/SFTP File Transfer Task Instance Details contains information on the execution of the task shown in the [FTP/SFTP File Transfer Task Details](#).

File Transfer Task Instance Details: stonebranch-filetransfertask-01

Update Re-run View Parent Delete Refresh Close

File Transfer Task Instance Virtual Resources Exclusive Requests Output Notes

**General**

Instance Name: stonebranch-filetransfertask-01 Reference Id: 4

Task: stonebranch-filetransfertask-01 Invoked By: Manually Launched

Task Description:

Member of Business Services:

Execution User: stonebranch-user-01

Virtual Resource Priority: 10 Hold Resources on Failure:

**Status**

Status: Success Exit Code: 0

Status Description:

Operational Memo:

Wait Until Time: 2015-05-08 10:09:49 -0400

Queued Time: 2015-02-06 14:45:37 -0500

Trigger Time:

Start Time: 2015-02-06 14:45:41 -0500

Launch Time: 2015-02-06 14:45:37 -0500 End Time: 2014-06-20 13:09:49 -0400

Duration: 2 Seconds

**File Transfer Details**

Transfer Protocol: FTP Command: GET

Job Card (z/OS only): //FTPTST1 JOB CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID Subcommands (z/OS only):

Agent: Transfer Type: Binary

Agent Variable: Transfer Mode: Passive

Agent Cluster: Remote Server: ZOS1

Agent Cluster Variable: FTP Credentials: stonebranch-credential-02

Credentials: stonebranch-credential-01 FTP Credentials Variable:

Credentials Variable:

Local Filename: data1.test Remote Filename: data2.test

Use Regular Expression:

**Retry Options**

Retry Exit Codes:

Maximum Retries: 0 Retry Indefinitely:

Retry Interval (Seconds): 60 Suppress Intermediate Failures:

Current Retry Count: 0

**Wait/Delay Options**

Wait To Start: Seconds Wait Duration In Seconds: 30

Delay On Start: Seconds Delay Duration In Seconds: 30

**Critical Path Options**

CP Duration: CP Duration Unit: Minutes

**Statistics**

User Estimated End Time: Average Estimated End Time: 2014-06-06 11:11:05 -0400

Shortest Estimated End Time: Longest Estimated End Time:

Update Re-run View Parent Delete Refresh Close

### FTP/SFTP File Transfer Task Instance Details Field Descriptions



The following table describes the fields, buttons, and tabs that display in FTP/SFTP File Transfer Task Instance Details.



Field Name	Description
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<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	System-supplied; how the task instance was launched.  Options: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.



Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
<b>File Transfer Details</b>	This section contains assorted detailed information about the task instance.
Transfer Protocol	Type of transfer protocol for this file transfer.  Options: <ul style="list-style-type: none"> <li>• FTP</li> <li>• SFTP</li> <li>• UDM</li> </ul>
Command	File Transfer command being executed.  Options: <ul style="list-style-type: none"> <li>• GET - Copies a remote file to the local computer.</li> <li>• PUT - Copies a local file to the remote computer.</li> <li>• MGET - Copies multiple remote files to the local computer.</li> <li>• MPUT - Copies multiple local files to the remote computer.</li> <li>• DELETE - Deletes the specified file from the remote computer.</li> <li>• MDELETE - Deletes the specified file(s) from the remote computer</li> <li>• MKDIR - Creates the specified directory on the remote computer.</li> <li>• RMDIR - Removes the specified directory from the remote computer.</li> </ul>
Job Card (z/OS only)	For z/OS, the job card information for the JCL statement. Example: <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>//File TransferJOB01 JOB (File Transfer,001),FANNY,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&amp;SYSUID,CLASS=A</pre> </div>
Subcommands (z/OS only)	For z/OS, any subcommands used in the JCL statement.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .

<p>Agent Variable</p>	<p>Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
<p>Transfer Type</p>	<p>Data format of the file being transferred.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Binary</li> <li>• ASCII</li> </ul>
<p>Transfer Mode</p>	<p>Transfer mode.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Active</li> <li>• Passive</li> <li>• Extended Passive</li> </ul>
<p>Agent Cluster</p>	<p>Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.</p>
<p>Agent Cluster Variable</p>	<p>Indication of whether the <a href="#">Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Agent Cluster</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
<p>Cluster Broadcast</p>	<p>Group of Agents, all of which will run this task (compare with Agent Cluster). You can specify a Cluster Broadcast in place of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.</p>
<p>Remote Server</p>	<p>Required if <a href="#">Transfer Protocol</a> = FTP or SFTP; name or IP address of the File Transfer server. This machine may or may not be the same as the Agent machine.</p> <p>You also can specify a non-standard FTP or SFTP port:</p> <ul style="list-style-type: none"> <li>• For FTP, specify the port number separated from the host name with a space: "some.server.com 2222".</li> <li>• For SFTP, specify the port number separated from the host name with a colon: "some.server.com:2222".</li> </ul>


FTP Credentials	Login credentials that the Agent will use to access the FTP or SFTP server machine. If the File Transfer server and Agent are running on the same machine, enter the same credentials as those you entered in the Credentials field.
FTP Credentials Variable	<p>Indication of whether the <a href="#">FTP Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">FTP Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an FTP Credentials reference to using an FTP Credentials variable, you must change the <b>FTP Credentials Variable</b> field to <b>Yes</b> and specify the FTP Credentials variable in the <b>FTP Credentials Unresolved</b> field. Conversely, to change from using an FTP Credentials variable to using an FTP Credentials reference, you must change the <b>FTP Credentials Variable</b> field to <b>No</b> and specify the FTP Credentials reference in the <b>FTP Credentials</b> field.</p> </div>
Credentials	<a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.
Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Local Filename	Required if <a href="#">Transfer Type</a> = FTP or SFTP; path and file name on the local server. That is, the "transfer from" file name.
Use Regular Expression	Enables the use of a regular expression Wildcards and Regular Expressions in the <a href="#">Local Filename</a> field.
Remote Filename	Required if <a href="#">Transfer Type</a> = FTP or SFTP; path and file name on the remote server. That is, the "transfer to" file name.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.
Retry Interval	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.

<p>Suppress Intermediate Failures</p>	<p>User-defined; If the task instance is in the <b>Failed status</b>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <b>Maximum Retries</b> value has been entered or <b>Retry Indefinitely</b> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<b>Abort</b>, <b>Email Notification</b>, <b>Set Variable</b>, <b>SNMP Notification</b>, and <b>System Operation</b>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <b>Task Monitor</b> task that has a <b>Time Scope</b> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <b>Running/Problems</b> status.</li> </ul>
<p>Next Retry Time</p>	<p>System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.</p>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>

Wait Duration	If <a href="#">Wait To Start</a> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <a href="#">Wait To Start</a> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related statistics for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.

Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Average Estimated End Time	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Longest Estimated End Time	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.

<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Output</b>	<p>Displays output generated from the process.</p> <div data-bbox="339 396 1445 527" style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> For File Transfer task instances, output always is automatically retrieved and is available from the Output tab.</p> </div>
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

### UDM File Transfer Task Instance Details

The following UDM File Transfer Task Instance Details contains information on the execution of the task shown in the [UDM File Transfer Task Details](#).



File Transfer Task Instance Details: stonebranch-filetransfertask-02

File Transfer Task Instance

**General**

Instance Name:  Reference Id:

Task:  Invoked By:

Task Description:

Member of Business Services:  Execution User:

Virtual Resource Priority:  Hold Resources on Failure:

**Status**

Status:  Exit Code:

Status Description:

Operational Memo:

Wait Until Time:

Queued Time:

Trigger Time:  Start Time:

Launch Time:  End Time:

Duration:

**File Transfer Details**

Transfer Protocol:

Utility Agent:  Transfer Type:

Utility Agent Variable:  Encrypt:

Utility Agent Cluster:  Compress:

Utility Agent Cluster Variable:  Codepage:

Utility Credentials:  File Creation Option:

Utility Credentials Variable:  Trim Trailing Spaces:

Network Fault Tolerant:

Runtime Directory:

Form or Script:

Local Filename:  Remote Filename:

Use Regular Expression:

Source File System:  Destination File System:

Source UDM Agent:  Destination Infitran Agent:

Source UDM Agent Option:  Destination Infitran Agent Option:

Source Credentials:  Destination Credentials:

Source Credentials Variable:  Destination Credentials Variable:

Append Source Open Options:  Append Destination Open Options:

Append UDM Options:

Exit Code Processing:

Exit Codes:

**Retry Options**

Retry Exit Codes:

Maximum Retries:  Retry Indefinitely:

Retry Interval (Seconds):  Suppress Intermediate Failures:

Current Retry Count:

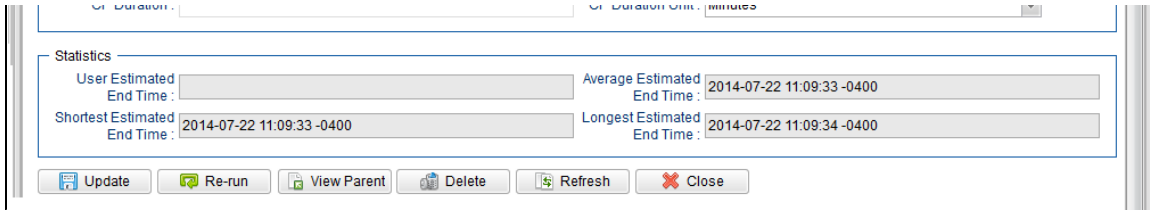
**Wait/Delay Options**

Wait To Start:  Wait Duration In Seconds:

Delay On Start:  Delay Duration In Seconds:

**Critical Path Options**

CP Duration:  CP Duration Unit:






### UDM File Transfer Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in UDM File Transfer Task Instance Details.



Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	System-supplied; how the task instance was launched.  Options: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.

Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
<b>File Transfer Details</b>	This section contains assorted detailed information about the task instance.
Transfer Protocol	Type of transfer protocol for this file transfer. Options: <ul style="list-style-type: none"> <li>• FTP</li> <li>• SFTP</li> <li>• UDM</li> </ul>
Utility Agent	Name of the Windows or Linux/Unix Agent resource that will communicate with the Universal Command Agent. If you do not specify an Agent, you must specify an <a href="#">agent cluster</a> .

<p>Utility Agent Variable</p>	<p>If enabled, the <a href="#">Utility Agent</a> field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent reference to using a Utility Agent variable, you must change the <b>Utility Agent Variable</b> field to <b>Yes</b> and specify the Utility Agent variable in the <b>Utility Agent Unresolved</b> field. Conversely, to change from using a Utility Agent variable to using a Utility Agent reference, you must change the <b>Utility Agent Variable</b> field to <b>No</b> and specify the Utility Agent reference in the <b>Utility Agent</b> field.</p> </div>
<p>Utility Agent Cluster</p>	<p>Group of Agents, one of which the Controller will choose to run this task. You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific Agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.</p>
<p>Utility Agent Cluster Variable</p>	<p>Indication of whether the <a href="#">Utility Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Utility Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Agent Cluster reference to using a Utility Agent Cluster variable, you must change the <b>Utility Agent Cluster Variable</b> field to <b>Yes</b> and specify the Utility Agent Cluster variable in the <b>Utility Agent Cluster Unresolved</b> field. Conversely, to change from using a Utility Agent Cluster variable to using a Utility Agent Cluster reference, you must change the <b>Utility Agent Cluster Variable</b> field to <b>No</b> and specify the Utility Agent Cluster reference in the <b>Utility Agent Cluster</b> field.</p> </div>
<p>Utility Credentials</p>	<p>Login credentials that the Agent will use to access the Universal Command server machine.</p>
<p>Utility Credentials Variable</p>	<p>Indication of whether the <a href="#">Utility Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Utility Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Utility Credentials reference to using a Utility Credentials variable, you must change the <b>Utility Credentials Variable</b> field to <b>Yes</b> and specify the Utility Credentials variable in the <b>Utility Credentials Unresolved</b> field. Conversely, to change from using a Utility Credentials variable to using a Utility Credentials reference, you must change the <b>Utility Credentials Variable</b> field to <b>No</b> and specify the Utility Credentials reference in the <b>Utility Credentials</b> field.</p> </div>
<p>Transfer Type</p>	<p>Type of data transfer.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Binary</li> <li>• Text</li> </ul>

Encrypt	<p>The method of encryption that the Controller will use in the transfer.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• YES</li> <li>• NO (none)</li> <li>• RC4-SHA</li> <li>• RC4-MD5</li> <li>• AES256-SHA</li> <li>• AES128-SHA</li> <li>• DES-CBC3-SHA</li> <li>• DES-CBC-SHA</li> <li>• NULL-SHA</li> <li>• NULL-MD5</li> <li>• NULL-NULL</li> <li>• AES256-GCM-SHA384</li> <li>• AES128-GCM-SHA256</li> </ul>
Compress	<p>The type of data compression used in the transfer, if any.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• YES</li> <li>• NO</li> <li>• ZLIB</li> <li>• HASP</li> </ul>
Codepage	Options: (see <a href="#">Code Pages</a> , below)
File Creation Option	<p>Specifies whether the transferred file should be created (new), appended, or replace any existing file.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• APPEND</li> <li>• NEW</li> <li>• REPLACE</li> </ul>
Trim Trailing Spaces	If enabled, specifies that the Controller should trim trailing spaces from lines on a text transfer.
Network Fault Tolerant	Enable if the session is network fault tolerant.
Runtime Directory	Directory from which the application should be executed. <a href="#">Variables</a> supported.
Source Filename(s)	Required; Path and file name on the source UDM server.
Use Regular Expression	Enables the use of a <a href="#">regular expression</a> in the <a href="#">Source Filename(s)</a> field.
Destination Filename	Required; Path and file name on the destination UDM server.

<p>Source File System</p>	<p>Type of file system on the source server.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• DSN</li> <li>• HFS</li> <li>• LIB</li> </ul>
<p>Destination File System</p>	<p>Type of file system on the destination server.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• DSN</li> <li>• HFS</li> <li>• LIB</li> </ul>
<p>Source UDM Agent</p>	<p>Required; Name of the Agent resource defined in the Controller that describes the source UDM Agent machine (primary transfer server).</p>
<p>Destination UDM Agent</p>	<p>Required; Name of the Agent resource defined in the Controller that provides details about the destination UDM Agent machine (secondary transfer server).</p>
<p>Source UDM Agent Option</p>	<p>Defines how you will specify the Source UDM Agent.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• UDM Agent - Source Agent is a UDM Agent defined in the Controller.</li> <li>• UDM Agent Variable - Source Agent will be defined by setting the variable in the <a href="#">Source UDM Agent</a> field.</li> <li>• UDM Agent Hostname - Source Agent runs on the host name specified in the <a href="#">Source UDM Agent</a> field.</li> </ul>
<p>Destination UDM Agent Option</p>	<p>Defines how you will specify the Destination UDM Agent.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• UDM Agent - Destination Agent is an UDM Agent defined in the Controller.</li> <li>• UDM Agent Variable - Destination Agent will be defined by setting the variable in the <a href="#">Destination UDM Agent</a> field.</li> <li>• UDM Agent Hostname - Destination Agent runs on the host name specified in the <a href="#">Destination UDM Agent</a> field.</li> </ul>
<p>Source Credentials</p>	<p>Specifies the source user ID and password (local to the host on which the server is running) under which the transfer operation is being carried out.</p>
<p>Destination Credentials</p>	<p>Specifies the destination user ID and password (local to the host on which the server is running) under which the transfer operation is being carried out.</p>

<p>Source Credentials Variable</p>	<p>Indication of whether the <a href="#">Source Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Source Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Source Credentials reference to using a Source Credentials variable, you must change the <b>Source Credentials Variable</b> field to <b>Yes</b> and specify the Source Credentials variable in the <b>Source Credentials Unresolved</b> field. Conversely, to change from using a Source Credentials variable to using a Source Credentials reference, you must change the <b>Source Credentials Variable</b> field to <b>No</b> and specify the Source Credentials reference in the <b>Source Credentials</b> field.</p> </div>
<p>Destination Credentials Variable</p>	<p>Indication of whether the <a href="#">Destination Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Destination Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Destination Credentials reference to using a Destination Credentials variable, you must change the <b>Destination Credentials Variable</b> field to <b>Yes</b> and specify the Destination Credentials variable in the <b>Destination Credentials Unresolved</b> field. Conversely, to change from using a Destination Credentials variable to using a Destination Credentials reference, you must change the <b>Destination Credentials Variable</b> field to <b>No</b> and specify the Destination Credentials reference in the <b>Destination Credentials</b> field.</p> </div>
<p>Append Source Open Options</p>	<p>Any additional free form open command options for the source (primary) transfer server.</p>
<p>Append Destination Open Option</p>	<p>Any additional free form open command options for the destination (secondary) transfer server.</p>
<p>Append UDM Options</p>	<p>Any additional free form Universal Data Mover command options.</p>
<p>Exit Code Processing</p>	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Success Exitcode Range</b> Command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• <b>Failure Exitcode Range</b> Command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• <b>Success Output Contains</b> Command is considered completed successfully if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• <b>Failure Output Contains</b> Command is considered failed if its output contains the text specified in the <a href="#">Scan Output For</a> field.</li> <li>• <b>Step Conditions (z/OS only)</b> Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the <a href="#">Step Conditions</a> tab (see <a href="#">Creating Step Conditions</a>).</li> </ul>
<p>Output Type-Exit Code</p>	<p>Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Standard Output (STDOUT)</li> <li>• Standard Error (STDERR)</li> <li>• File</li> </ul>


Exit Codes	Required if <a href="#">Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Scan Output For	Required if <a href="#">Exit Code Processing</a> = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File-Exit Codes	Required if <a href="#">Output Type</a> = File; path and file name of the output file that should be scanned for the text in the <a href="#">Scan Output For</a> field.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the <a href="#">Exit Codes</a> field. <a href="#">Maximum Retries</a> must be greater than 0.  If this field is empty, any exit code potentially will cause a retry.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.
Retry Interval	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.
Suppress Intermediate Failures	User-defined; If the task instance is in the <a href="#">Failed status</a> , indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made: <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched.  Options are: <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>



Wait Time	If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.
Wait Day Constraint	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is -- None --.</b></p>
Wait Duration	If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	<p>If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a>). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <b>Started Late</b> field; the field is checked if the instance started after the specified time. The <b>Started Late</b> field displays in the task instance Details only if the user specified a Late Start in the task Details.</p>

Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a> ). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.

Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for the task instances of this task.</p>
User Estimated End Time	<p>System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.</p>
Average Estimated End Time	<p>System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.</p>
Shortest Estimated End Time	<p>System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.</p>
Longest Estimated End Time	<p>System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.</p>

<b>Projected End Time</b>	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Output</b>	<p>Displays output generated from the process.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;">  <b>Note</b>                      For File Transfer task instances, output always is automatically retrieved and is available from the Output tab.                 </div>
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Output Redirection

An Agent processes File Transfer (UDM), Universal Command, and SAP tasks differently than Windows and Linux/Unix tasks. File Transfer (UDM), Universal Command, and SAP command lines are sent to the user process via standard input, so any redirection operators entered as task command input are not processed as expected.

If you want to direct output from a File Transfer (UDM) task to your file system, the **-uagstdio** command option lets you specify the same output redirection commands that are available for Windows and Linux/Unix tasks. UAG will apply the user-specified value for **-uagstdio** directly to the command image.

The I/O redirection commands that you can use with **-uagstdio** are dependent on the OS/command shell. You should be able to set up any redirection that the OS/command shell supports (just as with Windows and Linux/Unix tasks).

The syntax of **-uagstdio** is similar to Universal Data Mover, Universal Command, and Universal Connector [command line options](#); option followed by value.

For a File Transfer (UDM ) task, you can specify **uagstdio** in the following field:

- [Append UDM Options](#)

### -uagstdio Examples

```
-uagstdio >C:\UDMOUT\udm.out
```

If the **-uagstdio** value contains spaces, it must be enclosed in double quotation marks ( " ):

```
-uagstdio ">C:\UDMOUT\udm.out 2>C:\UDMOUT\udm.err"
```

If the quoted value itself requires double quotation marks, they must be doubled ( "" ):

```
-uagstdio ">C:\tmp\" \"udm output\" \"\udm.out 2>C:\tmp\" \"udm output\" \"\udm.err"
```

## Specifying When a Task Runs

You can run the task as part of a [workflow](#), [specify triggers](#) that run the task automatically based on times or events, or [run the task manually](#).

## Running a File Transfer Task

You can run a File Transfer task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the File Transfer tasks list or File Transfer Task Details [Action menu](#).
- As part of a [workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## Code Pages

The following table identifies all supported code pages for a [UDM File Transfer task](#).

ISO8859-1	op437	IBM Portugal 037
ISO8859-2	op737	IBM German 273
ISO8859-3	op775	IBM Danish and Norwegian 277
ISO8859-4	op850	IBM Sweden and Finland 278
ISO8859-5	op852	IBM Italian 280
ISO8859-6	op855	IBM Spanish 284
ISO8859-7	op857	IBM International 500
ISO8859-8	op860	IBM Greek 875
ISO8859-9	op861	IBM Latin-1 1047

ISO8859-10	cp862	IBM Portugal 1140
ISO8859-13	cp863	IBM German 1141
ISO8859-14	cp864	IBM Danish 1142
ISO8859-15	cp865	IBM Finish 1143
	cp866	IBM Italian 1144
	cp869	IBM Spanish 1145
	cp874	IBM UK 1146
	cp1250	IBM Swiss 1148
	cp1251	IBM Greek 4971
	cp1252	
	cp1253	
	cp1254	
	cp1255	
	cp1256	
	cp1257	
	cp1258	

## Manual Task

- Overview
- Built-In Variables
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- Manual Task Field Descriptions
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  - Manual Task Instance Details Field Descriptions
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### Overview

Manual tasks are used to create a pause in a Workflow during which the user must take some action.

The processing of a Manual task within a Workflow is described here:

<b>Step 1</b>	While its upstream tasks are running, a Manual task instance remains in WAITING status. When the Manual task instance launches, it goes immediately into ACTION REQUIRED status, meaning you must perform some manual activity. Universal Controller also sets the <b>Started Time</b> in the Manual task instance to the time that the task instance went into the ACTION REQUIRED status.
<b>Step 2</b>	Optionally, you can re-set the <b>Started Time</b> of the Manual task by issuing the <b>Set Started</b> command. Either: <ol style="list-style-type: none"> <li>1. On the Activity Monitor, right-click the Manual task and select <b>Set Started</b>.</li> <li>2. On the Workflow Monitor, right-click the Manual task and select <b>Commands &gt; Set Started</b>.</li> </ol>
<b>Step 3</b>	When you have completed the activities called for in the Manual task, you must indicate that the task is completed and that the Workflow can continue. Either: <ol style="list-style-type: none"> <li>1. On the Activity Monitor, right-click the Manual task and select <b>Set Completed</b>.</li> <li>2. On the Workflow Monitor, right-click the Manual task and select <b>Commands &gt; Set Completed</b>.</li> </ol>
<b>Step 4</b>	The Manual task goes into SUCCESS status, the End Time is set, and the Workflow continues.  If the Manual task is not completed but you still want the Workflow to continue, select <b>Force Finish</b> .



**Note**

You also can set a Manual task to STARTED or COMPLETED status from the [Command Line Interface \(CLI\)](#).

### Built-In Variables

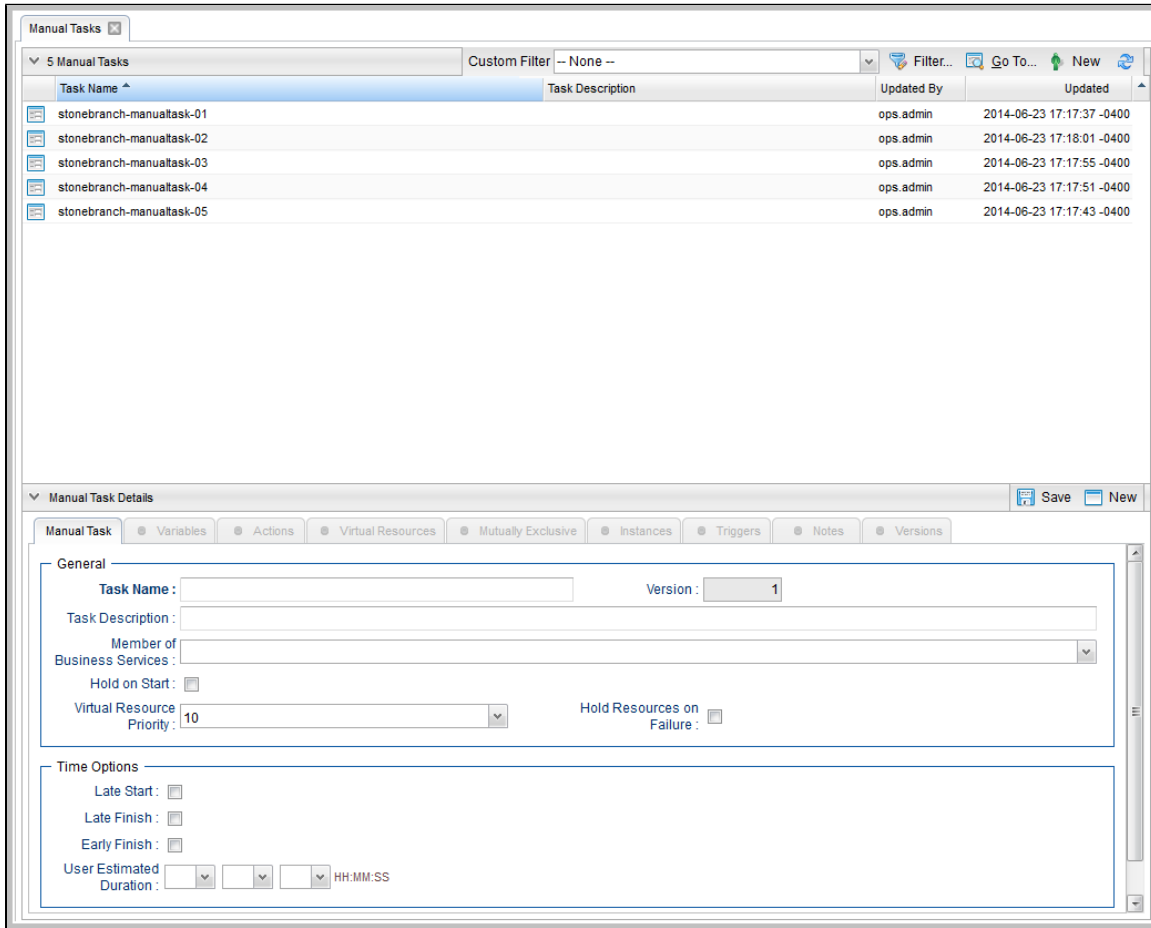
The following [built-in variables](#) can be used in a Manual task to pass data where appropriate:

- [Task Instance variables](#)

### Creating a Manual Task

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > Manual Tasks**. The Manual Tasks list displays a list of all currently defined Manual tasks.

Below the list, Manual Task Details for a new Manual task displays.



**Step 2** Enter/select Details for a new Manual task, using the [field descriptions](#) below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).



## Manual Task Details

The following Manual Task Details is for an existing Manual task.

Depending on the values that you enter / select for these fields, and whether or not the Manual task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Manual Task Details.

## Manual Task Field Descriptions


The following table describes the fields, buttons, and tabs that display in the Manual Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions</a> tab to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.

Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched.  Options are: <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.
Wait Day Constraint	If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.  Valid values: <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
Wait Duration	If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.

Wait Duration In Seconds	If <a href="#">Wait To Start</a> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
Workflow Only	<p>Specification for whether or not to apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• - - System Default - - Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications as defined by the <a href="#">System Default Wait/Delay Workflow Only</a> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</li> <li>• No Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications whether or not the task is in a Workflow.</li> </ul>
<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>

Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

<p>CP Duration Unit</p>	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<p><b>Statistics</b></p>	<p>This section contains time-related statistics for task instances of the task.</p>
<p>First Time Ran</p>	<p>System-supplied; date and time this task first ran.</p>
<p>Last Time Ran</p>	<p>System-supplied; date and time the task last ran.</p>
<p>Last Instance Duration</p>	<p>System-supplied; amount of time the task took to run the last time it ran.</p>
<p>Lowest Instance Time</p>	<p>System-supplied; shortest amount of time this task has taken to run.</p>
<p>Average Instance Time</p>	<p>System-supplied; average amount of time this task takes to run.</p>
<p>Highest Instance Time</p>	<p>System-supplied; longest amount of time this task has taken to run.</p>
<p>Number of Instances</p>	<p>System-supplied; number of instances in the database for this task.</p>
<p><b>Buttons</b></p>	<p>This section identifies the buttons displayed above and below the Details that let you perform various actions.</p>
<p><b>Save</b></p>	<p>Saves a new task record in the Controller database.</p>
<p><b>Update</b></p>	<p>Saves updates to the record.</p>
<p><b>New</b></p>	<p>Displays empty (except for default values) Details for creating a new task.</p>
<p><b>Launch Task</b></p>	<p>Manually launches the task.</p>
<p><b>View Parents</b></p>	<p>Displays a list of any parent Workflow tasks for this task.</p>
<p><b>Copy</b></p>	<p>Creates a copy of this task, which you are prompted to rename.</p>
<p><b>Delete</b></p>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>• Specified in an enabled Trigger.</li> <li>• The only task specified in a disabled Trigger.</li> </ul> </div>

<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.										
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.										
<b>Tabs</b>	This section identifies the tabs across the top of the Details that provide access to additional information about the task.										
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.										
<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1"> <tr> <td><b>Abort Action</b></td> <td>Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td><b>Email Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td><b>Set Variable</b></td> <td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td><b>SNMP Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td><b>System Operation</b></td> <td>Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
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<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of the task.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## Viewing a Manual Task Instance

When a Manual task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [Manual Task Details](#) for that task

- Activity Monitor
- Task Instances list

## Manual Task Instance Details

The following Manual Task Instance Details contains information on the execution of the task shown in the [Manual Task Details](#).

## Manual Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Manual Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.

Invoked by	<p>System-supplied; how the task instance was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Trigger: (Trigger Name)</b> Instance was launched by the named trigger.</li> <li>• <b>Workflow: (Workflow Name)</b> Instance was launched by the named workflow.</li> <li>• <b>Manually Launched</b> Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	<p>Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.</p> <p>Options: 1 (high) - 20 (low).</p> <p>Default is 10.</p>
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.



Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.
Wait Day Constraint	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
Wait Duration	If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.

Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.

Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Average Estimated End Time	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Longest Estimated End Time	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Set Started</b>	Sets the task instance to the <a href="#">Started</a> status.
<b>Set Completed</b>	Sets the task instance to the <a href="#">Success</a> status.
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .

<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Running a Manual Task

You can run a Manual task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the Manual Tasks list or Manual Task Details [Action menu](#).
- As part of a [workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## Timer Task

- Overview
- Built-In Variables
- Creating a Timer Task
  - Timer Task Details
  - Timer Task Details Field Descriptions
- Viewing a Timer Task Instance
  - Timer Task Instance Details
  - Timer Task Instance Details Field Descriptions
- Running a Timer Task
- Monitoring Task Execution

### Overview

The Timer task allows you to execute a timer command for a specified period of time or until a specific time. This task is helpful, for example, if you need to impose a pause in the processing of a Workflow.

### Built-In Variables

The following built-in variables can be used in a Manual task to pass data where appropriate:

- Task Instance variables

### Creating a Timer Task

**Step 1** From the Automation Center navigation pane, select **Tasks > Timer Tasks**. The Timer Tasks list displays a list of all currently defined Timer tasks.

Below the list, Timer Task Details for a new Timer task displays.

The screenshot shows the 'Timer Tasks' interface. At the top, there is a list of 5 timer tasks:

Task Name	Task Description	Timer Type	Updated By	Updated
stonebranch-timertask-01		Seconds	ops.admin	2014-06-13 14:12:54 -0400
stonebranch-timertask-02		Seconds	ops.admin	2014-06-13 14:13:03 -0400
stonebranch-timertask-03		Seconds	ops.admin	2014-06-13 14:13:08 -0400
stonebranch-timertask-04		Seconds	ops.admin	2014-06-13 14:13:13 -0400
stonebranch-timertask-05		Seconds	ops.admin	2014-06-13 14:13:17 -0400

Below the list is the 'Timer Task Details' form, which is currently in a collapsed state. The form has tabs for 'Timer Task', 'Variables', 'Actions', 'Virtual Resources', 'Mutually Exclusive', 'Instances', 'Triggers', 'Notes', and 'Versions'. The 'Timer Task' tab is active, showing the following fields:

- Task Name:** (Required field, currently empty)
- Version:** (Default value: 1)
- Task Description:** (Text area, currently empty)
- Member of Business Services:** (Dropdown menu, currently empty)
- Hold on Start:** (Checkbox, currently unchecked)
- Virtual Resource Priority:** (Dropdown menu, currently set to 10)
- Hold Resources on Failure:** (Checkbox, currently unchecked)
- Timer Type:** (Dropdown menu, currently set to Seconds)
- Wait Time in Seconds:** (Text input, currently empty)
- Late Start:** (Checkbox, currently unchecked)

**Step 2** Enter/select Details for a new Timer task, using the [field descriptions](#) below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## Timer Task Details

The following Linux/Unix Task Details is for an existing Linux/Unix task.

Depending on the values that you enter / select for these fields, and whether or not the Timer task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Timer Task Details.

## Timer Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Timer Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions</a> tab to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)




Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Timer Details</b>	This section contains assorted detailed information about the task.
Timer Type	User-supplied; the type of Timer command you want to execute.  Options: <ul style="list-style-type: none"> <li>• Time Use the <a href="#">Timer Time</a> field (and, optionally, the <a href="#">Timer Day Constraint</a> field) to specify the time of day that you want the Timer task to be completed.</li> <li>• Relative Time Use the <a href="#">Timer Time</a> field (and, optionally, the <a href="#">Timer Day Constraint</a> field) to specify time of day, relative to the Trigger/Launch Time, that you want the Timer task to be completed.</li> <li>• Duration Use the <a href="#">Timer Duration</a> field to specify the number of days, hours, minutes, and/or seconds that the Timer task will run.</li> <li>• Seconds Use the <a href="#">Timer Duration in Seconds</a> field to specify the number of seconds that the Timer task will run.</li> </ul>
Timer Time (HH:MM)	If <a href="#">Timer Type</a> = Time; Time of day (in 24-hour time) that the Timer task should go to a completed status.

<p>Timer Day Constraint</p>	<p>If <b>Timer Type</b> = Time or Relative Time; Specification for whether or not to advance the timer to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Timer Type</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Timer Type</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Timer Duration</p>	<p>If <b>Timer Type</b> = Duration; Number of days, hours, minutes, and/or seconds the Timer task will run.</p>
<p>Timer Duration in Seconds</p>	<p>If <b>Timer Type</b> = Seconds; Number of seconds the Timer task will run.</p>
<p><b>Time Options</b></p>	<p>This section contains time-related specifications for the task.</p>
<p>Late Start</p>	<p>If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a>). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.</p>
<p>Late Start Type</p>	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
<p>Late Start Time</p>	<p>If <b>Late Start Type</b> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.</p>

Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
Late Finish Duration	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>

CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the task instances of the task.
First Time Ran	System-supplied; date and time this task first ran.
Last Time Ran	System-supplied; date and time the task last ran.
Last Instance Duration	System-supplied; amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; shortest amount of time this task has taken to run.
Average Instance Time	System-supplied; average amount of time this task takes to run.
Highest Instance Time	System-supplied; longest amount of time this task has taken to run.
Number of Instances	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.

<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.										
<b>Delete button</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>										
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.										
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.										
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.										
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.										
<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>Task instance status</li> <li>Exit codes</li> <li>Late start</li> <li>Late finish</li> <li>Early finish</li> </ul> <p>Actions are:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>Abort Action</b></td> <td>Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td style="background-color: #e0e0e0;"><b>Email Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td style="background-color: #e0e0e0;"><b>Set Variable</b></td> <td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td style="background-color: #e0e0e0;"><b>SNMP Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td style="background-color: #e0e0e0;"><b>System Operation</b></td> <td>Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .										
<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .										
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<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of this Workflow.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										

## Viewing a Timer Task Instance

When a Timer task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [Timer Task Details](#) for that task
- [Activity list](#)
- [Task Instances list](#)

## Timer Task Instance Details

The following Timer Task Instance Details contains information on the execution of the task shown in the [Timer Task Details](#).

The screenshot shows a web-based interface for viewing a timer task instance. The title bar reads 'Timer Task Instance Details: stonebranch-timertask-01'. The interface includes a toolbar with buttons for Update, Re-run, View Parent, Delete, Refresh, and Close. Below the toolbar are tabs for 'Timer Task Instance', 'Virtual Resources', 'Exclusive Requests', and 'Notes'. The main content is organized into several sections:

- General:** Instance Name (stonebranch-timertask-01), Reference Id (1), Task (stonebranch-timertask-01), Invoked By (Workflow: stonebranch-workflow-01), Task Description, Member of Business Services, Execution User (stonebranch-user-01), Virtual Resource Priority (10), and Hold Resources on Failure.
- Status:** Status (Finished), Status Description (State was forced from WAITING to FINISHED), Queued Time (2015-02-06 14:45:37 -0500), Trigger Time, Start Time (2015-02-06 14:45:37 -0500), Launch Time (2015-02-06 14:45:37 -0500), End Time (2015-02-06 15:45:37 -0500), Duration, and Run Until Time (2015-02-06 15:45:37 -0500).
- Timer Details:** Timer Type (Seconds) and Time in Seconds (10).
- Critical Path Options:** CP Duration and CP Duration Unit (Minutes).
- Statistics:** User Estimated End Time, Average Estimated End Time, Shortest Estimated End Time, and Longest Estimated End Time.

At the bottom, there is another set of buttons for Update, Re-run, View Parent, Delete, Refresh, and Close.

## Timer Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Timer Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.

Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	System-supplied; how the task instance was launched.  Options: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Queued Time	System-supplied; Date and time the task was queued for processing.

Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Run Until Time	Calculated run time.
CPU Time	System-supplied; amount of CPU time the task took to run.
<b>Timer Details</b>	This section contains assorted detailed information about the task instance.
Timer Type	<p>User-supplied; the type of Timer command you want to execute.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time Use the <a href="#">Timer Time</a> field (and, optionally, the <a href="#">Timer Day Constraint</a> field) to specify the time of day that you want the Timer task to be completed.</li> <li>• Relative Time Use the <a href="#">Timer Time</a> field (and, optionally, the <a href="#">Timer Day Constraint</a> field) to specify time of day, relative to the Trigger/Launch Time, that you want the Timer task to be completed.</li> <li>• Duration Use the <a href="#">Timer Duration</a> field to specify the number of days, hours, minutes, and/or seconds that the Timer task will run.</li> <li>• Seconds Use the <a href="#">Timer Duration in Seconds</a> field to specify the number of seconds that the Timer task will run.</li> </ul>
Timer Time (HH:MM)	If <a href="#">Timer Type</a> = Time; Time of day (in 24-hour time) that the Timer task should go to a completed status.



<p>Timer Day Constraint</p>	<p>If <b>Timer Type</b> = Time or Relative Time; Specification for whether or not to advance the timer to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None --                     <ul style="list-style-type: none"> <li>• If <b>Timer Type</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Timer Type</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Timer Duration</p>	<p>If <b>Timer Type</b> = Duration; Number of days, hours, minutes, and/or seconds the Timer task will run.</p>
<p>Timer Duration in Seconds</p>	<p>If <b>Timer Type</b> = Seconds; Number of seconds the Timer task will run.</p>
<p><b>Time Options</b></p>	<p>This section contains time-related specifications for the task instance.</p>
<p>Late Start</p>	<p>If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <b>Late Start Type</b>). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <b>Started Late</b> field; the field is checked if the instance started after the specified time. The <b>Started Late</b> field displays in the task instance Details only if the user specified a Late Start in the task Details.</p>
<p>Started Late</p>	<p>System-supplied; this field is flagged if the task started later than the time specified in the <b>Late Start</b> fields.</p>
<p>Late Start Type</p>	<p>Required if <b>Late Start</b> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.</li> </ul>
<p>Late Start Time</p>	<p>If <b>Late Start Type</b> = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.</p>

Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
Finished Late	<p>System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.</p>
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
Late Finish Duration	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Finished Early	<p>System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.</p>
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>

CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Average Estimated End Time	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Longest Estimated End Time	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .

<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Running a Timer Task

You can run a Timer task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the Timer tasks list or Timer Task Details [Action](#) menu.
- As part of a [workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History](#) list.

## SQL Task

- Overview
- Built-In Variables
- Creating a SQL Task
  - SQL Task Details
  - SQL Task Details Field Descriptions
- Viewing a SQL Task Instance
  - SQL Task Instance Details
  - SQL Task Instance Details Field Descriptions
- Running a SQL Task
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### Overview

The SQL task allows you to execute one or a series of SQL statements against the database specified in the task.

**Note**

Before you can run a SQL task, you first must create a [Database Connection](#), which defines the information needed to locate and access the database.

### Built-In Variables

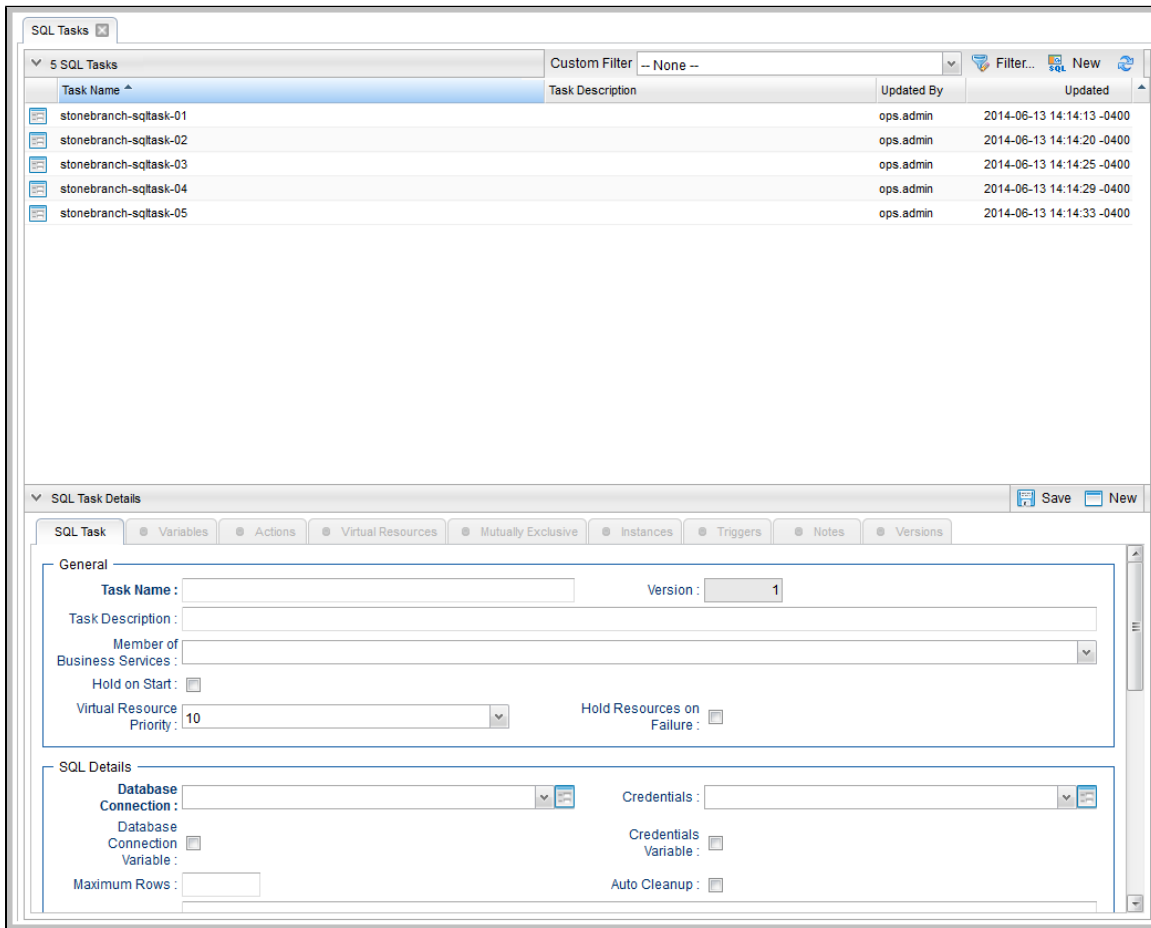
The following [built-in variables](#) can be used in a SQL task to pass data where appropriate:

- Task Instance variables
- SQL Task variables

### Creating a SQL Task

**Step 1** From the Automation Center navigation pane, select **Tasks > SQL Tasks**. The SQL Tasks list displays a list of all currently defined SQL tasks.

Below the list, SQL Task Details for a new SQL task displays.



**Step 2** Enter/select Details for a new SQL task, using the field descriptions below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## SQL Task Details

The following SQL Task Details is for an existing SQL task.

Depending on the values that you enter / select for these fields, and whether or not the SQL task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the SQL Task Details.

The screenshot displays the 'SQL Task Details' window for a task named 'stonebranch-sqltask-01'. The interface includes a top toolbar with buttons for 'Update', 'Launch Task', 'View Parents', 'Copy', 'Delete', 'Refresh', and 'Close'. Below the toolbar are tabs for 'SQL Task', 'Variables', 'Actions', 'Virtual Resources', 'Mutually Exclusive', 'Instances', 'Triggers', 'Notes', and 'Versions'. The main content area is divided into several sections:


- General:** Contains fields for 'Task Name' (stonebranch-sqltask-01), 'Version' (1), 'Task Description', 'Member of Business Services' (dropdown), 'Hold on Start' (checkbox), 'Virtual Resource Priority' (10), and 'Hold Resources on Failure' (checkbox).
- SQL Details:** Includes 'Database Connection' (QA Mssql Connection), 'Credentials', 'Database Connection Variable', 'Maximum Rows', 'SQL Command' (dir), 'Auto Cleanup' (checkbox), and 'Result Processing' (Skip Result Processing).
- Retry Options:** Features 'Maximum Retries' (0), 'Retry Interval (Seconds)' (60), 'Retry Indefinitely' (checkbox), and 'Suppress Intermediate Failures' (checkbox).
- Wait/Delay Options:** Has dropdowns for 'Wait To Start', 'Delay On Start', and 'Workflow Only' (System Default).
- Time Options:** Includes checkboxes for 'Late Start', 'Late Finish', and 'Early Finish', along with 'User Estimated Duration' (Day, Hour, Min, Sec).
- Critical Path Options:** Shows 'CP Duration' and 'CP Duration Unit' (Minutes).

A bottom toolbar contains buttons for 'Update', 'Launch Task', 'View Parents', 'Copy', 'Delete', 'Refresh', and 'Close'.


## SQL Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the SQL Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.

Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions tab</a> to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>SQL Details</b>	This section contains assorted detailed information about the task.
Database Connection	Name of the Universal Controller <a href="#">database connection</a> that defines the database. Select a database from the drop-down list or click the icon to create a new database connection.
Database Connection Variable	Indication of whether the <a href="#">Database Connection</a> field is a reference field for selecting a specific <a href="#">Database Connection</a> (unchecked) or a text field for specifying the <a href="#">Database Connection</a> as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in <a href="#">Variables and Functions</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using a Database Connection reference to using a Database Connection variable, you must change the <b>Database Connection Variable</b> field to <b>Yes</b> and specify the Database Connection variable in the <b>Database Connection Unresolved</b> field. Conversely, to change from using a Database Connection variable to using a Database Connection reference, you must change the <b>Database Connection Variable</b> field to <b>No</b> and specify the Database Connection reference in the <b>Database Connection</b> field.</p> </div>
Credentials	<a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.




Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\$(variable name)</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Maximum Rows	<p>If necessary, specifies a limit to the number of rows you want returned by the SQL statement. This value overrides any value you specify in the <a href="#">database connection</a>.</p>
Auto Cleanup	<p>When data is retrieved as the result of a SQL task, the data is written into a database table. If Auto Cleanup is enabled, the data is discarded upon the successful completion of the task (or workflow if the task is contained within a workflow).</p>
SQL Command	<p>SQL command being executed against the database. <a href="#">Variables</a> supported.</p>
Result Processing	<p>Specifies how the Controller should determine whether the SQL command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Skip Result Processing</li> <li>• Success Exitcode Range - The SQL command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range - The SQL command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Result Set Contains - The SQL command is considered completed successfully depending on the value in the first row of a specific database column (see <a href="#">Column Name</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields).</li> <li>• Failure Result Set Contains - The SQL command is considered failed depending on the value in the first row of a specific database column (see <a href="#">Column Name</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields).</li> </ul>
Exit Codes	<p>Required if <a href="#">Result Processing</a> = Success Exitcode Range or Failure Exitcode Range. Specifies the range. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>
Column Name	<p>Required if <a href="#">Result Processing</a> = Success Result Set Contains or Failure Result Set Contains. Specifies the name of a database column that is being checked for a specific value.</p>
Operator	<p>Operator being used for the comparison. Options: =, !=, &gt;, &gt;=, &lt;, &lt;=, regex.</p>
Value	<p>Value being compared, using the operator specified.</p>
<b>Retry Options</b>	<p>This section contains specifications for retrying the task.</p>
Maximum Retries	<p>User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.</p>
Retry Indefinitely	<p>User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.</p>

<p>Retry Interval (Seconds)</p>	<p>User-defined; number of seconds between each retry.</p>
<p>Suppress Intermediate Failures</p>	<p>User-defined; If the task instance is in the <b>Failed status</b>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <b>Maximum Retries</b> value has been entered or <b>Retry Indefinitely</b> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<b>Abort</b>, <b>Email Notification</b>, <b>Set Variable</b>, <b>SNMP Notification</b>, and <b>System Operation</b>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <b>Task Monitor</b> task that has a <b>Time Scope</b> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <b>Running/Problems</b> status.</li> </ul>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None --             <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>

Wait Duration	If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.
Workflow Only	<p>Specification for whether or not to apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• - - System Default - - Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications as defined by the <b>System Default Wait/Delay Workflow Only</b> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</li> <li>• No Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications whether or not the task is in a Workflow.</li> </ul>
<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <b>Late Start Type</b> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <b>Started Late</b> field; the field is checked if the instance started after the specified time. The <b>Started Late</b> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	<p>Required if <b>Late Start</b> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <b>start time</b>.</li> </ul>
Late Start Time	If <b>Late Start Type</b> = Time; Time after which the task <b>start time</b> is considered late. Use HH:MM, 24-hour time.

Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
Late Finish Duration	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>

CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for task instances of the task.
First Time Ran	System-supplied; date and time this task first ran.
Last Time Ran	System-supplied; date and time the task last ran.
Last Instance Duration	System-supplied; amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; shortest amount of time this task has taken to run.
Average Instance Time	System-supplied; average amount of time this task takes to run.
Highest Instance Time	System-supplied; longest amount of time this task has taken to run.
Number of Instances	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update button</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.

<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.										
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>										
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.										
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.										
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.										
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.										
<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>Task instance status</li> <li>Exit codes</li> <li>Late start</li> <li>Late finish</li> <li>Early finish</li> </ul> <p>Actions are:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>Abort Action</b></td> <td>Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td style="background-color: #e0e0e0;"><b>Email Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td style="background-color: #e0e0e0;"><b>Set Variable</b></td> <td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td style="background-color: #e0e0e0;"><b>SNMP Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td style="background-color: #e0e0e0;"><b>System Operation</b></td> <td>Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
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<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of the task.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										

<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .
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## Viewing a SQL Task Instance

When a SQL task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [SQL Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

## SQL Task Instance Details

The following SQL Task Instance Details contains information on the execution of a SQL task.

SQL Task Instance Details: ecu-select-all-zos-criteria
Update Re-run View Parent Delete Refresh Close

SQL Task Instance
SQL Results
SQL Warnings
Virtual Resources
Exclusive Requests
Notes

**General**

Instance Name:  Reference Id:

Task:  Invoked By:

Task Description:

Member of Business Services:  Execution User:

Virtual Resource Priority:  Hold Resources on Failure:

**Status**

Status:

Status Description:

Operational Memo:

Wait Until Time:

Queued Time:

Trigger Time:  Start Time:

Launch Time:  End Time:

Duration:

SQL State:  Rows Retrieved:

SQL Error Message:

**SQL Details**

Database Connection:  Credentials:

Database Connection Variable:  Credentials Variable:

Maximum Rows:  Auto Cleanup:

SQL Command:

Result Processing:

**Retry Options**

Retry Exit Codes:

Maximum Retries:  Retry Indefinitely:

Retry Interval (Seconds):  Suppress Intermediate Failures:

Current Retry Count:

**Wait/Delay Options**

Wait To Start:  Wait Duration In Seconds:

Delay On Start:  Delay Duration In Seconds:

**Critical Path Options**

CP Duration:  CP Duration Unit:

**Statistics**

User Estimated End Time:  Average Estimated End Time:

Shortest Estimated End Time:  Longest Estimated End Time:


Update
Re-run
View Parent
Delete
Refresh
Close


### SQL Task Instance Details Field Descriptions



The following table describes the fields, buttons, and tabs that display in the SQL Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	System-supplied; how the task instance was launched. Options: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 20 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
SQL State	System-supplied; resolves to a return code that indicates the outcome of the most recently executed SQL statement.
Rows Retrieved	System-supplied; number of rows retrieved by the SQL procedure.
SQL Error Message	System-supplied; any error messages returned by the SQL procedure.
<b>SQL Details</b>	This section contains assorted detailed information about the task instance.
Database Connection	Name of the Universal Controller <a href="#">database connection</a> that defines the database. Select a database from the drop-down list or click the icon to create a new database connection.
Database Connection Variable	Indication of whether the <a href="#">Database Connection</a> field is a reference field for selecting a specific <a href="#">Database Connection</a> (unchecked) or a text field for specifying the <a href="#">Database Connection</a> as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in <a href="#">Variables and Functions</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Database Connection reference to using a Database Connection variable, you must change the <b>Database Connection Variable</b> field to <b>Yes</b> and specify the Database Connection variable in the <b>Database Connection Unresolved</b> field. Conversely, to change from using a Database Connection variable to using a Database Connection reference, you must change the <b>Database Connection Variable</b> field to <b>No</b> and specify the Database Connection reference in the <b>Database Connection</b> field.</p> </div>
Credentials	<a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.

Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\$(variable name)</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Maximum Rows	<p>If necessary, specifies a limit to the number of rows you want returned by the SQL statement. This value overrides any value you specify in the <a href="#">database connection</a>.</p>
Auto Cleanup	<p>When data is retrieved as the result of a SQL task, the data is written into a database table. If Auto Cleanup is enabled, the data is discarded upon the successful completion of the task (or workflow if the task is contained within a workflow).</p>
SQL Command	<p>SQL command being executed against the database. <a href="#">Variables</a> supported.</p>
Result Processing	<p>Specifies how the Controller should determine whether the SQL command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Skip Result Processing</li> <li>• Success Exitcode Range - The SQL command is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range - The SQL command is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Result Set Contains - The SQL command is considered completed successfully depending on the value in the first row of a specific database column (see <a href="#">Column Name</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields).</li> <li>• Failure Result Set Contains - The SQL command is considered failed depending on the value in the first row of a specific database column (see <a href="#">Column Name</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields).</li> </ul>
Exit Codes	<p>Required if <a href="#">Result Processing</a> = Success Exitcode Range or Failure Exitcode Range. Specifies the range. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>
Column Name	<p>Required if <a href="#">Result Processing</a> = Success Result Set Contains or Failure Result Set Contains. Specifies the name of a database column that is being checked for a specific value.</p>
Operator	<p>Operator being used for the comparison. Options: =, !=, &gt;, &gt;=, &lt;, &lt;=, regex.</p>
Value	<p>Value being compared, using the operator specified.</p>
<b>Retry Options</b>	<p>This section contains specifications for retrying the task.</p>
Maximum Retries	<p>User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.</p>
Retry Indefinitely	<p>User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.</p>

Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.
Suppress Intermediate Failures	<p>User-defined; If the task instance is in the <a href="#">Failed status</a>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p><b>Time Options</b></p>	<p>This section contains time-related specifications for the task instance.</p>
<p>Late Start</p>	<p>If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a>). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <b>Started Late</b> field; the field is checked if the instance started after the specified time. The <b>Started Late</b> field displays in the task instance Details only if the user specified a Late Start in the task Details.</p>
<p>Started Late</p>	<p>System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.</p>

Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	<p>If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.</p>
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
Finished Late	<p>System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.</p>
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
Late Finish Duration	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Finished Early	<p>System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.</p>
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>

Early Finish Time	If <b>Early Finish Type</b> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <b>Early Finish Type</b> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <b>CP Duration Unit</b> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <b>CP Duration</b> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <b>CP Duration</b> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <b>CP Duration</b> . If the Controller is unable to resolve <b>CP Duration</b> or it resolves to an invalid value, <b>CP Duration</b> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <b>CP Duration</b> field. For example, for a CP Duration of two minutes, specify 2 in the <b>CP Duration</b> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <b>User Estimated Duration</b> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Average Estimated End Time	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Longest Estimated End Time	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <b>critical path duration</b> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.

<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>SQL Results</b>	Stores results of executed SQL statements, if any.
<b>SQL Warnings</b>	Warnings returned by executed SQL statements, if any.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Running a SQL Task

You can run a SQL task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the SQL tasks list or SQL Task Details [Action menu](#).
- As part of a [workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).



## Stored Procedure Task

- Overview
- Built-In Variables
- Creating a Stored Procedure Task
  - Stored Procedure Task Details
  - Stored Procedure Task Details Field Descriptions
- Viewing a Stored Procedure Task Instance
  - Stored Procedure Task Instance Details
  - Stored Procedure Task Instance Details Field Descriptions
- Adding Stored Procedure Parameters
  - Adding a Parameter
  - Stored Procedure Parameter Field Descriptions
  - Deleting a Parameter
- Running a Stored Procedure Task
- Monitoring Task Execution

### Overview

A Stored Procedure task allows you to execute a stored procedure against the database specified in the task.

**Note**

Before you can run a Stored Procedure task, you first must create a [Database Connection](#), which defines the information needed to locate and access the database.

### Built-In Variables

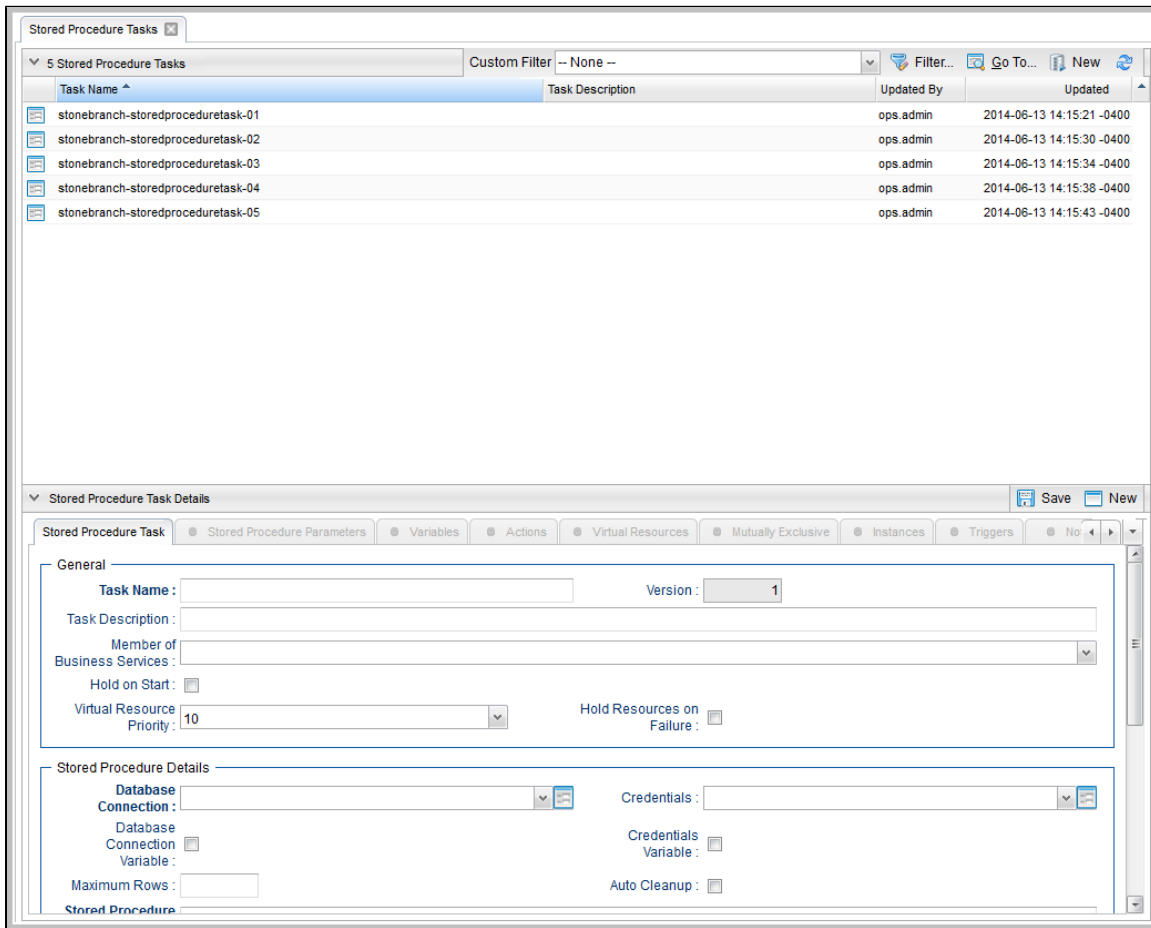
The following [built-in variables](#) can be used in a Stored Procedure task to pass data where appropriate:

- [Task Instance variables](#)
- [Stored Procedure Task variables](#)

### Creating a Stored Procedure Task

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > Stored Procedure Tasks**. The Stored Procedure Tasks list displays a list of all currently defined Stored Procedure tasks.

Below the list, Stored Procedure Task Details for a new Stored Procedure task displays.



**Step 2** Enter/select Details for a new Stored Procedure task, using the [field descriptions](#) below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## Stored Procedure Task Details


The following Stored Procedure Task Details is for an existing Stored Procedure task.


Depending on the values that you enter / select for these fields, and whether or not the Stored Procedure task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Stored Procedure Task Details.

## Stored Procedure Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Stored Procedure Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions</a> tab to view previous versions. For details, see <a href="#">Record Versioning</a> .

Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Stored Procedure Details</b>	This section contains assorted detailed information about the task.
Database Connection	Name of the Universal Controller <a href="#">database connection</a> that defines the database. Select a database from the drop-down list or click the icon to create a new database connection.
Database Connection Variable	Indication of whether the <a href="#">Database Connection</a> field is a reference field for selecting a specific <a href="#">Database Connection</a> (unchecked) or a text field for specifying the <a href="#">Database Connection</a> as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in <a href="#">Variables and Functions</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using a Database Connection reference to using a Database Connection variable, you must change the <b>Database Connection Variable</b> field to <b>Yes</b> and specify the Database Connection variable in the <b>Database Connection Unresolved</b> field. Conversely, to change from using a Database Connection variable to using a Database Connection reference, you must change the <b>Database Connection Variable</b> field to <b>No</b> and specify the Database Connection reference in the <b>Database Connection</b> field.</p> </div>
Credentials	<a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.

Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Maximum Rows	<p>If necessary, specifies a limit to the number of rows you want returned by the SQL statement. This value overrides any value you specify in the <a href="#">database connection</a>.</p>
Auto Cleanup	<p>When data is retrieved as the result of a SQL task, the data is written into a database table. If Auto Cleanup is enabled, the data is discarded upon the successful completion of the task (or workflow if the task is contained within a workflow).</p>
Stored Procedure Name	<p>Name of the file containing the stored procedure being executed against the database. <a href="#">Variables</a> supported.</p>
Result Processing	<p>Specifies how the Controller should determine whether the Stored Procedure failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Skip Result Processing.</li> <li>• Success Exitcode Range - The Stored Procedure is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range - The Stored Procedure is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Result Set Contains - The Stored Procedure is considered completed successfully depending on the value in a specific database column (see <a href="#">Column Name</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields).</li> <li>• Failure Result Set Contains - The Stored Procedure is considered failed depending on the value in a specific database column (see <a href="#">Column Name</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields).</li> <li>• Success Output Parameter - The Stored Procedure is considered completed successfully if its output parameter satisfies the condition specified in the associated <a href="#">Parameter Position</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields.</li> <li>• Failure Output Parameter - The Stored Procedure is considered failed if its output parameter satisfies the condition specified in the associated <a href="#">Parameter Position</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields.</li> </ul>
Exit Codes	<p>Required if <a href="#">Result Processing</a> = Success Exitcode Range or Failure Exitcode Range. Specifies the range. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>
Parameter Position	<p>If <a href="#">Result Processing</a> = Success Output Parameter or Failure Output Parameter; position of this parameter within a list of parameters.</p>
Operator	<p>Operator being used for the comparison. Options: =, !=, &gt;, &gt;=, &lt;, &lt;=, regex.</p>
Value	<p>Value being compared, using the operator specified.</p>
Column Name	<p>Required if <a href="#">Result Processing</a> = Success Result Set Contains or Failure Result Set Contains. Specifies the name of a database column that is being checked for a specific value.</p>


Operator	Operator being used for the comparison. Options: =, !=, >, >=, <, <=, regex.
Value	Value being compared, using the operator specified.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Suppress Intermediate Failures	<p>User-defined; If the task instance is in the <a href="#">Failed status</a>, indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made:</p> <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p>Workflow Only</p>	<p>Specification for whether or not to apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• - - System Default - - Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications as defined by the <b>System Default Wait/Delay Workflow Only</b> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</li> <li>• No Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications whether or not the task is in a Workflow.</li> </ul>

<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a> ). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.



Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for task instances of the task.</p>
First Time Ran	<p>System-supplied; date and time this task first ran.</p>
Last Time Ran	<p>System-supplied; date and time the task last ran.</p>
Last Instance Duration	<p>System-supplied; amount of time the task took to run the last time it ran.</p>
Lowest Instance Time	<p>System-supplied; shortest amount of time this task has taken to run.</p>

<b>Average Instance Time</b>	System-supplied; average amount of time this task takes to run.
<b>Highest Instance Time</b>	System-supplied; longest amount of time this task has taken to run.
<b>Number of Instances</b>	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task instance.
<b>Stored Procedure Parameters</b>	See <a href="#">Adding Stored Procedure Parameters</a> , below.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" data-bbox="277 478 1484 837"> <tr> <td data-bbox="277 478 418 548"> <b>Abort Action</b> </td> <td data-bbox="418 478 1484 548">                     Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.                 </td> </tr> <tr> <td data-bbox="277 548 418 621"> <b>Email Notification</b> </td> <td data-bbox="418 548 1484 621">                     Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.                 </td> </tr> <tr> <td data-bbox="277 621 418 695"> <b>Set Variable</b> </td> <td data-bbox="418 621 1484 695">                     Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.                 </td> </tr> <tr> <td data-bbox="277 695 418 768"> <b>SNMP Notification</b> </td> <td data-bbox="418 695 1484 768">                     Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.                 </td> </tr> <tr> <td data-bbox="277 768 418 837"> <b>System Operation</b> </td> <td data-bbox="418 768 1484 837">                     Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.                 </td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .										
<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .										
<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .										
<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of the task.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## Viewing a Stored Procedure Task Instance

When a Stored Procedure task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [Stored Procedure Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

## Stored Procedure Task Instance Details

The following Stored Procedure Task Instance Details contains information on the execution of the task shown in the [Stored Procedure Task Details](#).

SQL Task Instance Details: ecu-select-all-zos-criteria
Update Re-run View Parent Delete Refresh Close

SQL Task Instance
SQL Results
SQL Warnings
Virtual Resources
Exclusive Requests
Notes

**General**

Instance Name:  Reference Id:

Task:  Invoked By:

Task Description:

Member of Business Services:  Execution User:

Virtual Resource Priority:  Hold Resources on Failure:

**Status**

Status:

Status Description:

Operational Memo:

Wait Until Time:

Queued Time:

Trigger Time:  Start Time:

Launch Time:  End Time:

Duration:

SQL State:  Rows Retrieved:

SQL Error Message:

**SQL Details**

Database Connection:  Credentials:

Database Connection Variable:  Credentials Variable:

Maximum Rows:  Auto Cleanup:

SQL Command:

Result Processing:

**Retry Options**

Retry Exit Codes:

Maximum Retries:  Retry Indefinitely:

Retry Interval (Seconds):  Suppress Intermediate Failures:

Current Retry Count:

**Wait/Delay Options**

Wait To Start:  Wait Duration In Seconds:

Delay On Start:  Delay Duration In Seconds:

**Critical Path Options**

CP Duration:  CP Duration Unit:

**Statistics**

User Estimated End Time:  Average Estimated End Time:


Shortest Estimated End Time:  Longest Estimated End Time:


Update
Re-run
View Parent
Delete
Refresh
Close

### Stored Procedure Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Stored Procedure Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	<p>System-supplied; how the task instance was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Trigger: (Trigger Name)</b> Instance was launched by the named trigger.</li> <li>• <b>Workflow: (Workflow Name)</b> Instance was launched by the named workflow.</li> <li>• <b>Manually Launched</b> Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	<p>Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.</p> <p>Options: 1 (high) - 20 (low).</p> <p>Default is 10.</p>
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.

Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
SQL State	System-supplied; resolves to a return code that indicates the outcome of the most recently executed SQL statement.
Rows Retrieved	System-supplied; number of rows retrieved by the SQL procedure.
SQL Error Message	System-supplied; any error messages returned by the SQL procedure.
<b>Stored Procedure Details</b>	This section contains assorted detailed information about the task instance.
Database Connection	Name of the Universal Controller <a href="#">database connection</a> that defines the database. Select a database from the drop-down list or click the icon to create a new database connection.
Database Connection Variable	<p>Indication of whether the <a href="#">Database Connection</a> field is a reference field for selecting a specific <a href="#">Database Connection</a> (unchecked) or a text field for specifying the <a href="#">Database Connection</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Database Connection reference to using a Database Connection variable, you must change the <b>Database Connection Variable</b> field to <b>Yes</b> and specify the Database Connection variable in the <b>Database Connection Unresolved</b> field. Conversely, to change from using a Database Connection variable to using a Database Connection reference, you must change the <b>Database Connection Variable</b> field to <b>No</b> and specify the Database Connection reference in the <b>Database Connection</b> field.</p> </div>
Credentials	<a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.

Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Maximum Rows	<p>If necessary, specifies a limit to the number of rows you want returned by the SQL statement. This value overrides any value you specify in the <a href="#">database connection</a>.</p>
Auto Cleanup	<p>When data is retrieved as the result of a SQL task, the data is written into a database table. If Auto Cleanup is enabled, the data is discarded upon the successful completion of the task (or workflow if the task is contained within a workflow).</p>
Stored Procedure Name	<p>Name of the file containing the stored procedure being executed against the database. <a href="#">Variables</a> supported.</p>
Result Processing	<p>Specifies how the Controller should determine whether the Stored Procedure failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Skip Result Processing.</li> <li>• Success Exitcode Range - The Stored Procedure is considered completed successfully if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Failure Exitcode Range - The Stored Procedure is considered failed if its exit code falls within the range specified in the <a href="#">Exit Codes</a> field.</li> <li>• Success Result Set Contains - The Stored Procedure is considered completed successfully depending on the value in a specific database column (see <a href="#">Column Name</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields).</li> <li>• Failure Result Set Contains - The Stored Procedure is considered failed depending on the value in a specific database column (see <a href="#">Column Name</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields).</li> <li>• Success Output Parameter - The Stored Procedure is considered completed successfully if its output parameter satisfies the condition specified in the associated <a href="#">Parameter Position</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields.</li> <li>• Failure Output Parameter - The Stored Procedure is considered failed if its output parameter satisfies the condition specified in the associated <a href="#">Parameter Position</a>, <a href="#">Operator</a>, and <a href="#">Value</a> fields.</li> </ul>
Parameter Position	<p>If <a href="#">Result Processing</a> = Success Output Parameter or Failure Output Parameter; position of this parameter within a list of parameters.</p>
Operator	<p>Operator being used for the comparison. Options: =, !=, &gt;, &gt;=, &lt;, &lt;=, regex.</p>
Value	<p>Value being compared, using the operator specified.</p>
Exit Codes	<p>Required if <a href="#">Result Processing</a> = Success Exitcode Range or Failure Exitcode Range. Specifies the range. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p>
Column Name	<p>Required if <a href="#">Result Processing</a> = Success Result Set Contains or Failure Result Set Contains. Specifies the name of a database column that is being checked for a specific value.</p>

Operator	Operator being used for the comparison. Options: =, !=, >, >=, <, <=, regex.
Value	Value being compared, using the operator specified.
<b>Retry Options</b>	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the <a href="#">Maximum Retries</a> field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.
Suppress Intermediate Failures	User-defined; If the task instance is in the <a href="#">Failed status</a> , indicates whether or not the following will be suppressed until all scheduled retry attempts (a <a href="#">Maximum Retries</a> value has been entered or <a href="#">Retry Indefinitely</a> has been enabled) have been made: <ul style="list-style-type: none"> <li>• All Actions (<a href="#">Abort</a>, <a href="#">Email Notification</a>, <a href="#">Set Variable</a>, <a href="#">SNMP Notification</a>, and <a href="#">System Operation</a>) defined for the task instance on a Failed status.</li> <li>• Workflow conditional path processing; any Successors waiting on a failure path will not be released.</li> <li>• Task Monitors will not be notified of the Failed status. Also, any <a href="#">Task Monitor</a> task that has a <a href="#">Time Scope</a> in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which <b>Suppress Intermediate Failures</b> has been enabled.</li> <li>• Any Workflow containing the Failed task instance will not transition to the <a href="#">Running/Problems</a> status.</li> </ul>
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.



<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p><b>Time Options</b></p>	<p>This section contains time-related specifications for the task instance.</p>
<p>Late Start</p>	<p>If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a>). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <b>Started Late</b> field; the field is checked if the instance started after the specified time. The <b>Started Late</b> field displays in the task instance Details only if the user specified a Late Start in the task Details.</p>
<p>Started Late</p>	<p>System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.</p>

<p>Late Start Type</p>	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
<p>Late Start Time</p>	<p>If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.</p>
<p>Late Start Duration</p>	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
<p>Late Finish</p>	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
<p>Finished Late</p>	<p>System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.</p>
<p>Late Finish Type</p>	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a> ). The task must have a specific finish time.</li> </ul>
<p>Late Finish Time</p>	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
<p>Late Finish Duration</p>	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
<p>Early Finish</p>	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
<p>Finished Early</p>	<p>System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.</p>
<p>Early Finish Type</p>	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>

Early Finish Time	If <b>Early Finish Type</b> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <b>Early Finish Type</b> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <b>CP Duration Unit</b> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <b>CP Duration</b> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <b>CP Duration</b> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <b>CP Duration</b> . If the Controller is unable to resolve <b>CP Duration</b> or it resolves to an invalid value, <b>CP Duration</b> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <b>CP Duration</b> field. For example, for a CP Duration of two minutes, specify 2 in the <b>CP Duration</b> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <b>User Estimated Duration</b> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Average Estimated End Time	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Longest Estimated End Time	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <b>critical path duration</b> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.

<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Stored Procedure Parameters</b>	See <a href="#">Adding Stored Procedure Parameters</a> , below.
<b>SQL Results</b>	Stores results of executed SQL statements, if any.
<b>SQL Warnings</b>	Warnings returned by executed SQL statements, if any.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Output</b>	<p>Displays output generated from the process, if any, based on specifications provided by the user in the <a href="#">Automatic Output Retrieval</a> fields in the task Details.</p> <p>If automatic output retrieval was not available or was not selected, output can be obtained by clicking the <a href="#">Retrieve Output</a> button.</p>
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

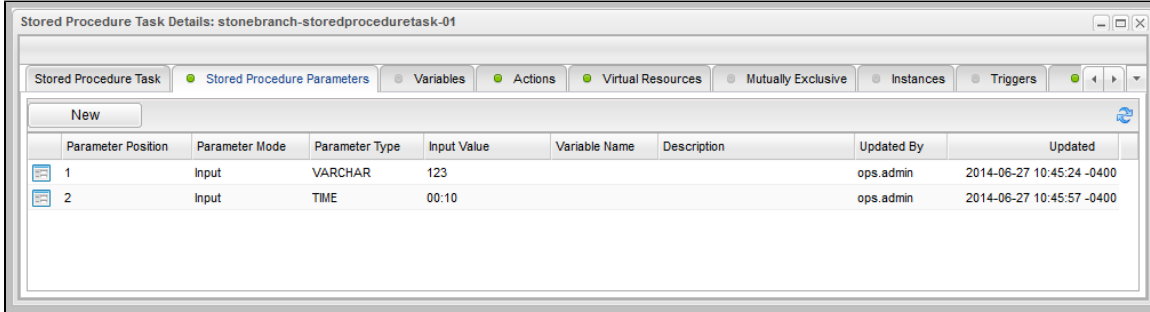
## Adding Stored Procedure Parameters

You can enter one or more parameters for each stored procedure, as described below.

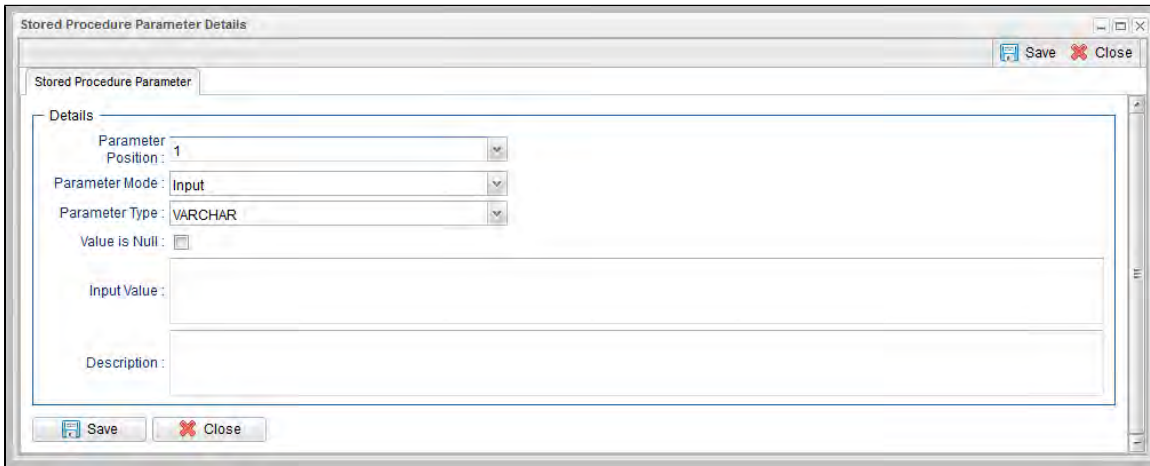
### Adding a Parameter

<b>Step 1</b>	Open the Stored Procedure task to which you want to add the parameter.
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**Step 2** Click the **Stored Procedure Parameters** tab. The Stored Procedure Parameters list displays a list of all currently defined Stored Procedure parameters.



**Step 3** Click the **New** button to display Stored Procedures Parameter Details for a new parameter.



**Step 4** Use the field descriptions, below, to define the parameter.

**Step 5** Click the **Save** button.

### Stored Procedure Parameter Field Descriptions

Field Name	Description
Parameter Position	Position of this parameter within a list of parameters.
Parameter Mode	Mode of this parameter. Options: <ul style="list-style-type: none"> <li>• Input</li> <li>• Output</li> <li>• Input/Output</li> </ul>

Parameter Type	Type of parameter. Options: <ul style="list-style-type: none"> <li>• NUMERIC</li> <li>• DECIMAL</li> <li>• INTEGER</li> <li>• SMALLINT</li> <li>• FLOAT</li> <li>• REAL</li> <li>• DOUBLE</li> <li>• VARCHAR</li> <li>• BOOLEAN</li> <li>• DATE</li> <li>• TIME</li> <li>• TIMESTAMP</li> <li>• BIGINT</li> <li>• VARBINARY</li> </ul>
Value is Null	If <b>Parameter Mode</b> = Input or Input/Output; Value for the parameter is a database NULL value; applies to the input part of a stored procedure parameter. That is, if a value in a database is undefined, it is NULL, which means it has no set value. An input value can be NULL and is represented by selecting <b>Value is Null</b> .
Input Value	If <b>Parameter Mode</b> = Input or Input/Output; Input value of the parameter, if any.
Description	Description of this parameter.
Variable Scope	If <b>Parameter Mode</b> = Output or Input/Output; applies to parameters associated with a task in a workflow. Scope of the variable to assign the Output value. Options: <ul style="list-style-type: none"> <li>• SELF</li> <li>• PARENT</li> <li>• TOP_LEVEL_PARENT</li> </ul>
Variable Name	If <b>Parameter Mode</b> = Output or Input/Output; name of variable to assign the Output value.

### Deleting a Parameter

To delete a single parameter, either:

- Right-click the parameter on the Stored Procedure Parameters list and click **Delete** on the **Action menu**.
- Open the Stored Procedure Parameter record and click the **Delete** button.

### Running a Stored Procedure Task

You can run a Stored Procedure task:

- Manually, by clicking the **Launch Task** or **Launch Task with Variables** button in the Stored Procedure tasks list or Stored Procedure Task Details **Action menu**.
- As part of a **workflow**.
- **Specify triggers** that run the task automatically based on times or events.

### Monitoring Task Execution

You can monitor all system activity from the **Activity Monitor** and can view activity history from the **History list**.

## Email Task

- Overview
- Built-In Variables
- Creating an Email Task
  - Email Task Details
  - Email Task Details Field Descriptions
  - Report Variable Resolution
- Viewing an Email Task Instance
  - Email Task Instance Details
  - Email Task Instance Details Field Descriptions
- Running an Email Task
- Monitoring Task Execution

### Overview

The Email task allows you to create and send emails. In order to execute Email tasks, you first need to define an [Email Connection](#), which defines the server information needed to create and send emails.

### Built-In Variables

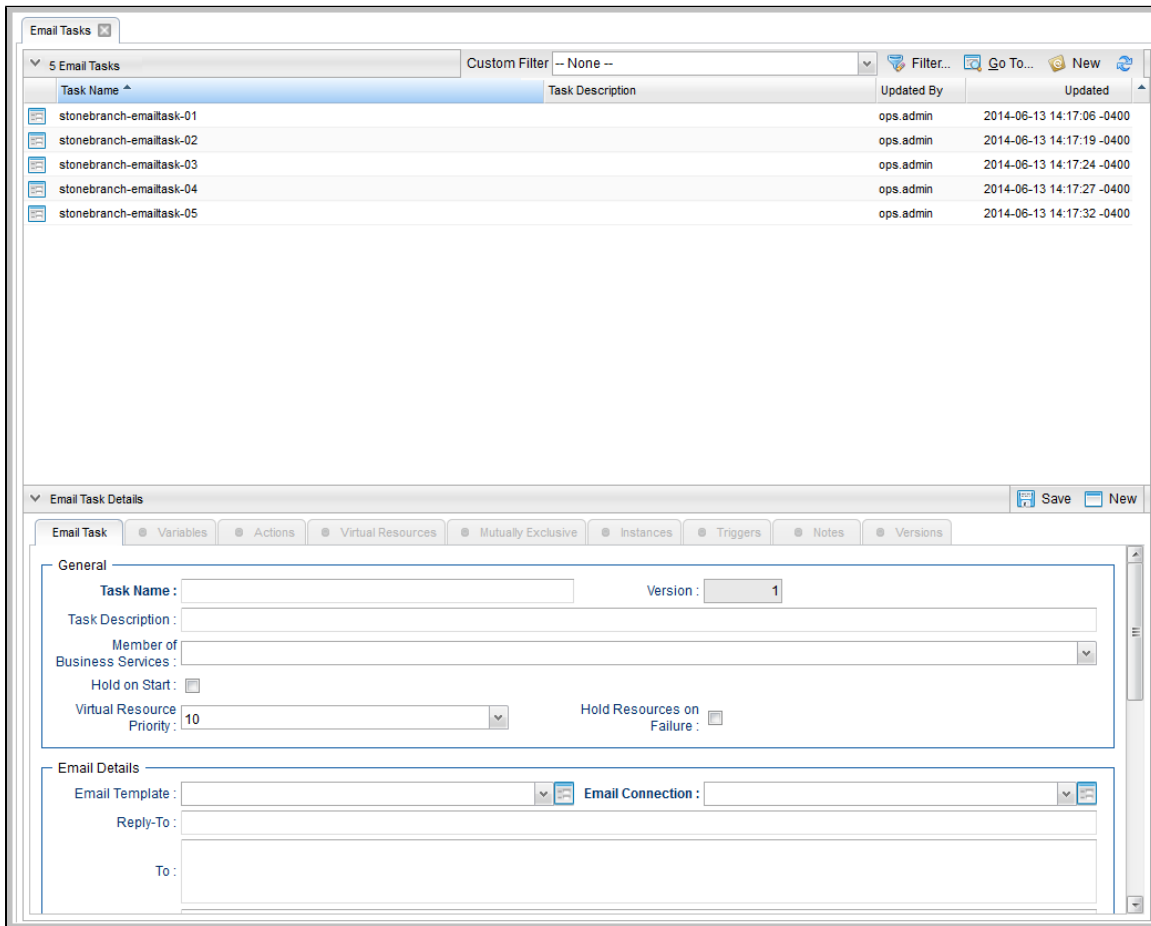
The following [built-in variables](#) can be used in an Email task to pass data where appropriate:

- [Task Instance variables](#)

### Creating an Email Task

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > Email Tasks**. The Email Tasks list displays a list of all currently defined Email tasks.

Below the list, Email Task Details for a new Email task displays.



**Step 2** Enter/select Details for a new Email task, using the [field descriptions](#) below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).



## Email Task Details

The following Email Task Details is for an existing Email task.


Depending on the values that you enter / select for these fields, and whether or not the Email task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Email Task Details.

## Email Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Email Task Details.

Field Name	Description
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<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions tab</a> to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Email Details</b>	This section contains assorted detailed information about the task.
Email Template	Name of an <a href="#">Email template</a> defined in an Email Template Details. An Email template allows you to specify standard recipients and text for outgoing emails. Enter the name of an existing Email template, select an Email template from the drop-down list, or click the Details icon to create a new Email template.  Every <a href="#">Email template</a> specifies an Email connection. If you do not specify an Email template in this field, you must specify an Email connection in the <a href="#">Email Connection</a> field.  If you specify both an Email template (in this field) and an <a href="#">Email Connection</a> , the Email server specified in the <a href="#">Email Connection</a> field overrides the Email server specified in this field.  (Any information specified in an Email task overrides what is specified in an Email template.)
Email Connection	Required if an Email Template is not specified in the <a href="#">Email Template</a> field; name of an <a href="#">Email Connection</a> . An Email Connection specifies information about an email server. Enter the name of an existing Email Connection, or click the magnifying glass to browse for an existing Email Connection or create a new Email Connection.  If you specify both an <a href="#">Email Template</a> and an Email Connection (in this field), the Email Connection specified in this field overrides the Email Connection specified in the <a href="#">Email Template</a> field.
Reply-To	Email address of the sender. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.
To	Email address of the recipient. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.

Cc	Email address of the party being sent a copy of the email, if any. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.
Bcc	Email address of the party being sent a blind (hidden) copy of the email, if any. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.
Subject	Subject line of the email. <a href="#">Variables and functions</a> supported.
Body	Text of the email message. <a href="#">Variables and functions</a> supported. If both the email template and the email task contain text in the body, the text is appended.
Report	<a href="#">Report</a> to attach to this email.
Report Variable	<p>Indication of whether the <a href="#">Report</a> field is a reference field for selecting a specific <a href="#">Report</a> (unchecked) or a text field for specifying the <a href="#">Report</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div data-bbox="306 779 1446 961" style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Email Tasks</a>, to change from using a report reference to using a report variable, you must change the <b>Report Variable</b> field to <b>Yes</b> and specify the report variable in the <b>Report Unresolved</b> field. Conversely, to change from using a report variable to a using a report reference, you must change the <b>Report Variable</b> field to <b>No</b> and specify the report reference in the <b>Report</b> field.</p> </div>
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p>Workflow Only</p>	<p>Specification for whether or not to apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• -- System Default -- Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications as defined by the <b>System Default Wait/Delay Workflow Only</b> system property. (Default is <b>yes.</b>)</li> <li>• Yes Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</li> <li>• No Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications whether or not the task is in a Workflow.</li> </ul>

<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.

Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for task instances of the task.</p>
First Time Ran	<p>System-supplied; date and time this task first ran.</p>
Last Time Ran	<p>System-supplied; date and time the task last ran.</p>
Last Instance Duration	<p>System-supplied; amount of time the task took to run the last time it ran.</p>
Lowest Instance Time	<p>System-supplied; shortest amount of time this task has taken to run.</p>

<b>Average Instance Time</b>	System-supplied; average amount of time this task takes to run.
<b>Highest Instance Time</b>	System-supplied; longest amount of time this task has taken to run.
<b>Number of Instances</b>	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new Linux/Unix task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b>                      You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" data-bbox="266 478 1484 840"> <tr> <td data-bbox="266 478 412 548"><b>Abort Action</b></td> <td data-bbox="412 478 1484 548">Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td data-bbox="266 548 412 617"><b>Email Notification</b></td> <td data-bbox="412 548 1484 617">Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td data-bbox="266 617 412 686"><b>Set Variable</b></td> <td data-bbox="412 617 1484 686">Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td data-bbox="266 686 412 756"><b>SNMP Notification</b></td> <td data-bbox="412 686 1484 756">Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td data-bbox="266 756 412 825"><b>System Operation</b></td> <td data-bbox="412 756 1484 825">Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .										
<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .										
<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .										
<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of the task.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## Report Variable Resolution

Reports do not have to be unique by [Title](#). However, Reports with the same Title must be unique per [visibility](#): per User, per Group, and per Everyone.

Accordingly, the following applies regarding [Report Variable](#) field resolution.

Once resolved, the [Report Variable](#) field value could match multiple Reports with the same Title, but with different visibilities. Therefore, there is an order of precedence to choosing the report by Title:

1. User visibility (execution user).
2. Group visibility (execution user's groups).
3. Everyone visibility.
4. Any other report(s). (This is applicable only in the case of an administrator who can view all reports.)

If the execution user belongs to more than one Group, and there is more than one report matching the Title visible to those Groups, the first report found will be chosen.



If multiple reports are found by resolved report Title, the following will be logged:

```
Found more than one report with name <report-title> visible to execution user <execution-user>.
```

If the resolved report Title does not match any report visible to the execution user, the task instance will transition into the [Start Failure](#) status with the following status description:

```
Could not find report with name <report-title> visible to execution user <execution-user>.
```

If the [Report Variable](#) cannot be resolved, the task instance will transition into the [Start Failure](#) status with the following status description:

```
Report variable not resolved.
```

A [Report Variable](#) that resolves to blank implies that no report should be included. This is not considered an error; the task instance will proceed as normal.

## Viewing an Email Task Instance

When an Email task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [Email Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

## Email Task Instance Details

The following Email Task Instance Details contains information on the execution of the task shown in the [Email Task Details](#).


### Email Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Email Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.

Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	<p>System-supplied; how the task instance was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	<p>Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.</p> <p>Options: 1 (high) - 20 (low).</p> <p>Default is 10.</p>
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.

Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
<b>Email Details</b>	This section contains assorted detailed information about the task instance.
Email Template	<p>Name of an <a href="#">Email template</a> defined in an Email Template Details. An Email template allows you to specify standard recipients and text for outgoing emails. Enter the name of an existing Email template, select an Email template from the drop-down list, or click the Details icon to create a new Email template.</p> <p>Every <a href="#">Email template</a> specifies an Email connection. If you do not specify an Email template in this field, you must specify an Email connection in the <a href="#">Email Connection</a> field.</p> <p>If you specify both an Email template (in this field) and an <a href="#">Email Connection</a>, the Email server specified in the <a href="#">Email Connection</a> field overrides the Email server specified in this field.</p> <p>(Any information specified in an Email task overrides what is specified in an Email template.)</p>
Email Connection	<p>Required if an Email Template is not specified in the <a href="#">Email Template</a> field; name of an <a href="#">Email Connection</a>. An Email Connection specifies information about an email server. Enter the name of an existing Email Connection, or click the magnifying glass to browse for an existing Email Connection or create a new Email Connection.</p> <p>If you specify both an <a href="#">Email Template</a> and an Email Connection (in this field), the Email Connection specified in this field overrides the Email Connection specified in the <a href="#">Email Template</a> field.</p>
Reply-To	Email address of the sender. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.
To	Email address of the recipient. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.
CC	Email address of the party being sent a copy of the email, if any. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.
BCC	Email address of the party being sent a blind (hidden) copy of the email, if any. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.
Subject	Subject line of the email. <a href="#">Variables and functions</a> supported.
Body	Text of the email message. <a href="#">Variables and functions</a> supported. If both the email template and the email task contain text in the body, the text is appended.
Report	<a href="#">Report</a> attached to this email.

<p>Report Variable</p>	<p>Indication of whether the <b>Report</b> field is a reference field for selecting a specific <b>Report</b> (unchecked) or a text field for specifying the <b>Report</b> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Email Tasks</a>, to change from using a report reference to using a report variable, you must change the <b>Report Variable</b> field to <b>Yes</b> and specify the report variable in the <b>Report Unresolved</b> field. Conversely, to change from using a report variable to using a report reference, you must change the <b>Report Variable</b> field to <b>No</b> and specify the report reference in the <b>Report</b> field.</p> </div>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None --                             <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>

Wait Duration In Seconds	If <a href="#">Wait To Start</a> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.

Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
Late Finish Duration	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Finished Early	<p>System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.</p>
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>

CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Average Estimated End Time	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Longest Estimated End Time	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.



<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Running an Email Task

You can run an Email task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the Email Tasks list or Email Task Details [Action](#) menu.
- As part of a [workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## Task Monitor Task

- [Overview](#)
- [Built-In Variables](#)
- [Processing Flow for Task Monitors](#)
  - [Launching a Task Monitor Task Within a Workflow](#)
  - [Launching a Task Monitor Task Using a Task Monitor Trigger](#)
  - [Launching a Task Monitor Task Manually or Via Other Trigger](#)
- [Creating a Task Monitor Task](#)
  - [Task Monitor Task Details](#)
  - [Task Monitor Task Details Field Descriptions](#)
- [Viewing a Task Monitor Task Instance](#)
  - [Task Monitor Task Instance Details](#)
  - [Task Monitor Task Instance Details Field Descriptions](#)
- [Monitoring Task Execution](#)

### Overview

The Task Monitor task monitors another task or tasks for one or more specific statuses.

When setting up a Task Monitor task, you can monitor:

- All tasks
- Specific task
- Task type, such as a Windows task
- Group of tasks based on the name, such as all tasks whose name contains the string **DEV**

You also can monitor for any combination of [task statuses](#).

For example, you can monitor for:

- All tasks with a status of RESOURCE WAIT or UNDELIVERABLE
- All Windows tasks in a FAILED status
- All tasks whose name contains **REPORT** that have a status of SUCCESS.

For Task Monitors within a workflow, you can also specify a Time Scope, or window of time, during which the event being monitored for must be satisfied.

### Built-In Variables

The following [built-in variables](#) can be used in a Task Monitor task to pass data where appropriate:

- [Task Instance variables](#)
- [Task Monitor Task variables](#)

### Processing Flow for Task Monitors

The processing on a Task Monitor may differ depending on which of the following methods was used to launch it:

- Launched by a workflow
- Launched by a Task Monitor trigger
- Launched manually or by another trigger

Each method is described in detail below.



#### Note

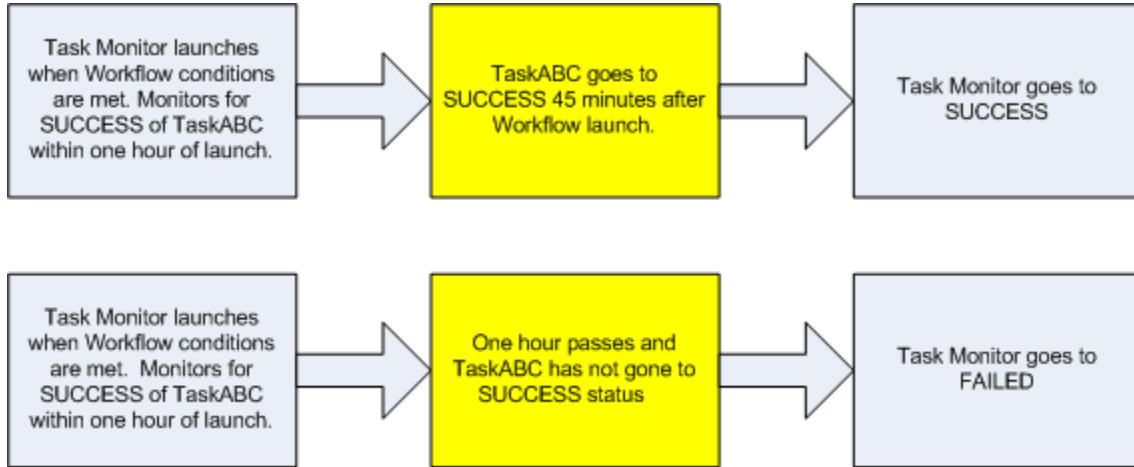
Any changes made to a Task Monitor task are not recognized by its respective Triggers until those Triggers are disabled and re-enabled.

### Launching a Task Monitor Task Within a Workflow

Within a Workflow, the Task Monitor task launches like any other task in the Workflow; that is, whenever the Workflow conditions warrant it. The Task Monitor runs until one of the conditions described below occurs:

- When the conditions specified in the Task Monitor are met, the Task Monitor goes to a status of SUCCESS.
- When the time window specified in the Task Monitor passes and the conditions in the Task Monitor are not met, the Task Monitor goes to a status of FAILED. If the time window is entirely in the past and Universal Controller does not locate the required event in the Activity table when the Task Monitor launches, the Task Monitor goes immediately to a FAILED status.
- If no time window is specified in the Task Monitor and the Task Monitor conditions are not met, the Task Monitor task continues running.
- A user can manually force finish the Task Monitor task.

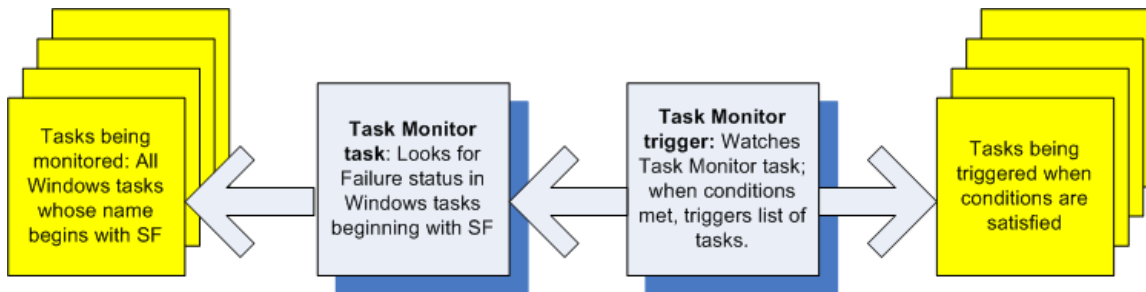
The following diagram illustrates how a Task Monitor might go to SUCCESS and FAILED status within a workflow.



### Launching a Task Monitor Task Using a Task Monitor Trigger

The Task Monitor task launches when the user enables the Task Monitor trigger. Each time the conditions in the Task Monitor task are satisfied, the tasks specified in the trigger are launched. This process continues until a user disables the associated Task Monitor trigger.

The following diagram shows an example of how you might set up a task monitoring scheme using the Task Monitor task and Task Monitor trigger.



### Launching a Task Monitor Task Manually or Via Other Trigger

If you manually launch a Task Monitor task or launch it using a trigger other than a Task Monitor trigger, such as a Time trigger, the task continues running until its specified conditions are met. When that occurs, the Task Monitor goes to SUCCESS. No other processing occurs unless you have configured notifications with the task or set up some other task(s) to launch based on the status of this task.

The Task Monitor runs until one of the conditions described below occurs:

- When the time window specified in the Task Monitor passes and the conditions in the Task Monitor are not met, the Task Monitor goes to a status of FAILED. If the time window is entirely in the past and the Controller does not locate the required event in the Activity table when the Task Monitor launches, the Task Monitor goes immediately to a FAILED status.
- If no time window is specified in the Task Monitor and the Task Monitor conditions are not met, the Task Monitor task continues running.

### Creating a Task Monitor Task

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > Task Monitor Tasks**. The Task Monitor Tasks list displays a list of all currently defined Task Monitor tasks.

Below the list, Task Monitor Task Details for a new Task Monitor task displays.

The screenshot shows the 'Task Monitors' interface. At the top, there is a list of 5 Task Monitors. Below the list, the 'Task Monitor Details' form is displayed, showing fields for General and Monitor Details.

Task Name	Task Description	Monitoring Type	Status To Monitor	Updated By	Updated
stonebranch-taskmonitor-01		Specific Task	Success	ops.admin	2014-06-13 14:18:45 -0400
stonebranch-taskmonitor-02		Specific Task	Success	ops.admin	2014-06-13 14:18:54 -0400
stonebranch-taskmonitor-03		Specific Task	Success	ops.admin	2014-06-13 14:18:59 -0400
stonebranch-taskmonitor-04		Specific Task	Success	ops.admin	2014-06-13 14:19:04 -0400
stonebranch-taskmonitor-05		Specific Task	Success	ops.admin	2014-06-13 14:19:08 -0400

The 'Task Monitor Details' form includes the following fields:

- General:** Task Name, Version (1), Task Description, Member of Business Services, Hold on Start, Virtual Resource Priority (10), Hold Resources on Failure.
- Monitor Details:** Status To Monitor, Monitoring Type (Specific Task), Task To Monitor, Workflow Name, Condition, Time Scope.

**Step 2** Enter/select Details for a new Task Monitor task, using the field descriptions below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

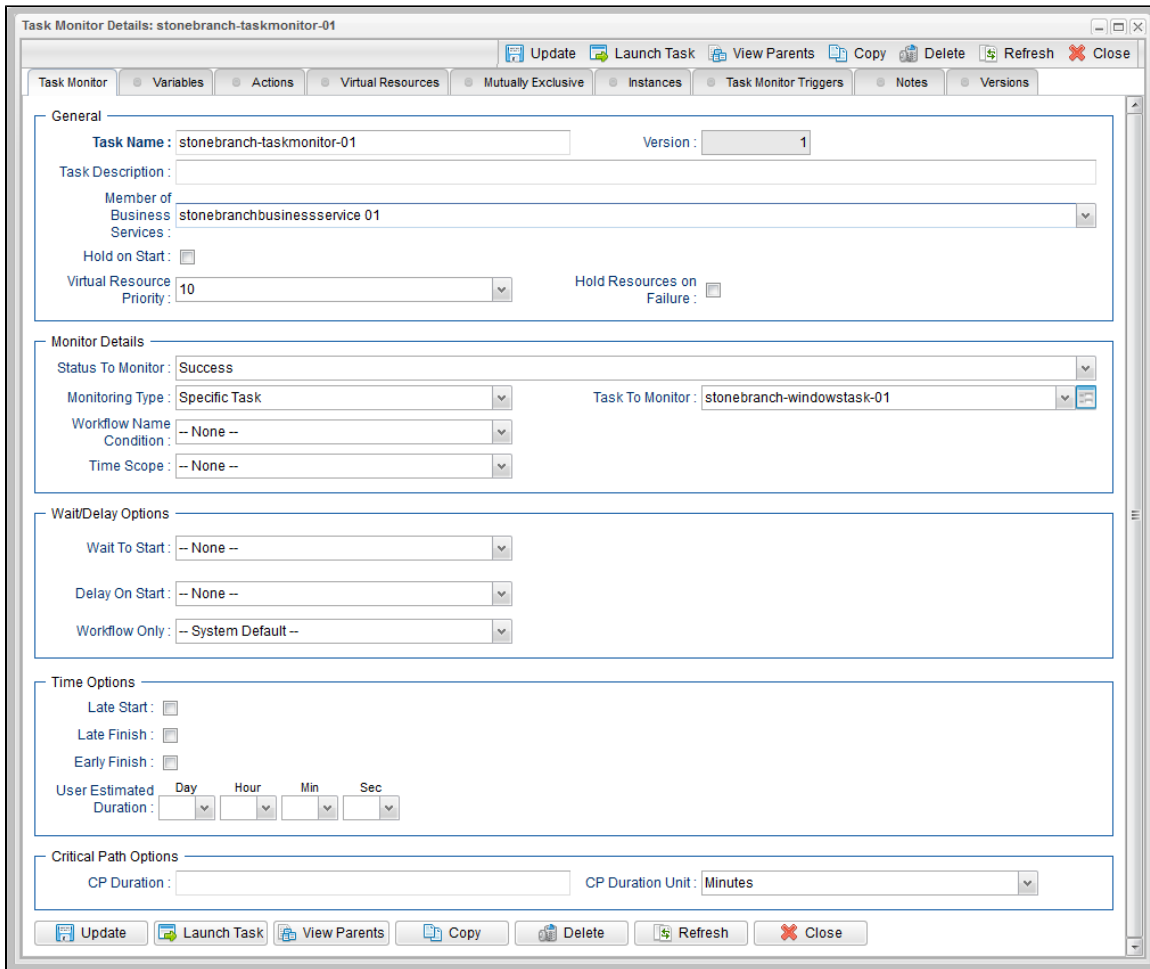
To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## Task Monitor Task Details

The following Task Monitor Task Details is for an existing Task Monitor task.

Depending on the values that you enter / select for these fields, and whether or not the Task Monitor task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Task Monitor Task Details.




## Task Monitor Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Task Monitor Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions</a> tab to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)

Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Task Monitor Details</b>	This section contains assorted detailed information about the task.
Status To Monitor	Status being monitored for. When the task being monitored goes to a status specified in this field, the associated trigger is satisfied and the tasks specified in the trigger launch. You can specify status only, or status and exit code. You can specify as many statuses as needed (see <a href="#">Task Statuses</a> ).
Monitoring Type	Specifies which task or tasks are being monitored.  Options: <ul style="list-style-type: none"> <li>• Specific Task - One task is being monitored. Use the <a href="#">Task to Monitor</a> field to specify the task name.</li> <li>• General Tasks - Allows you to specify selection parameters that determine which task or tasks to be monitored. Use the <a href="#">Task Name Condition</a> and <a href="#">Task Type to Monitor</a> fields to create your selection parameters.</li> </ul>
Task to Monitor	If <a href="#">Monitoring Type</a> = Specific Task; specifies the task to monitor. Enter a task name or select a task from the drop-down list. To display details about a task on the list, select it and then click the Task To Monitor icon.
Task Name Condition	If <a href="#">Monitoring Type</a> = General Task(s); specifies a type of condition for the name of tasks being monitored for. If you select a condition type, a corresponding field displays that allows you to enter a value for that condition. Only tasks meeting the specified condition value will be monitored for.  Options: <ul style="list-style-type: none"> <li>• - - None - -</li> <li>• Starts With</li> <li>• Contains</li> <li>• Ends With</li> </ul>
Task Type to Monitor	If <a href="#">Monitoring Type</a> = General Tasks; allows you to define specific task types to monitor for. For example, to monitor all SQL tasks, you would select <a href="#">Monitoring Type</a> = General Tasks, then select <a href="#">Task Type to Monitor</a> = SQL Tasks.
Task Name Starts With	If <a href="#">Task Name Condition</a> = Starts With; character string at the start of the name of a task or tasks being monitored for.
Task Name Contains	If <a href="#">Task Name Condition</a> = Contains; character string in the name of a task or tasks being monitored for.
Task Name Ends With	If <a href="#">Task Name Condition</a> = Ends With; character string at the end of the name of a task or tasks being monitored for.


<p>Workflow Name Condition</p>	<p>Type of condition for the name of a workflow or workflows containing the task being monitored for. If you select a condition type, a corresponding field displays that allows you to enter a value for that condition.</p> <p>Only tasks in workflows meeting the specified condition value will be monitored for.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• - - None - -</li> <li>• Equals</li> <li>• Starts With</li> <li>• Contains</li> <li>• Ends With</li> </ul>
<p>Workflow Name Equals</p>	<p>If <a href="#">Workflow Name Condition</a> = Equals; exact name of a workflow or workflows containing the task being monitored for.</p>
<p>Workflow Name Starts With</p>	<p>If <a href="#">Workflow Name Condition</a> = Starts With; character string at the start of the name of a workflow or workflows containing the task being monitored for.</p>
<p>Workflow Name Contains</p>	<p>If <a href="#">Workflow Name Condition</a> = Contains; character string in the name of a workflow or workflows containing the task being monitored for.</p>
<p>Workflow Name Ends With</p>	<p>If <a href="#">Workflow Name Condition</a> = Ends With; character string at the end of the name of a workflow or workflows containing the task being monitored for.</p>
<p>Time Scope</p>	<p>Used for Task Monitor tasks not associated with a trigger. The Time Scope fields are used to create a window during which the Task Monitor conditions must be met in order for the Task Monitor to be satisfied. The Time Scope window is always relative to the time that the Task Monitor launched. For example, if you put -01:00 in the <a href="#">From</a> time field and 02:00 in the <a href="#">To</a> time field, the window's begin time is one hour before the Task Monitor is launched and its end time is two hours after it is launched.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b> The task being monitored still must be in the <a href="#">Activity Monitor</a> in order for you to monitor for events that occurred in the past. If you specify a window that begins in the past, when the Task Monitor launches, it searches through the <a href="#">All Task Instances table</a> (ops_exec) for the specified event. If it locates the event, the Task Monitor is satisfied immediately.</p> </div>
<p>From [+/-]jh:mm</p>	<p>If <a href="#">Time Scope</a> = Relative; used for Task Monitor tasks not associated with a trigger. Together with the <a href="#">To</a> field, it allows you to specify a window of time, relative to the time the Task Monitor task launched, during which the conditions of the Task Monitor must be met. If the conditions are not met within the specified window, the Task Monitor task goes to a FAILED status.</p> <p>If you specify a past time in the this field, as soon as the Task Monitor task launches, the Controller searches the Activity table for past events that match the specified conditions. If the conditions are satisfied already, the Task Monitor task goes immediately to SUCCESS status. Otherwise, the Controller continues monitoring until the conditions are met or until the <a href="#">To</a> time has passed.</p>
<p>To [+/-]jh:mm</p>	<p>If <a href="#">Time Scope</a> = Relative; used for Task Monitor tasks not associated with a trigger. This field, together with the Time Scope <a href="#">From</a> field, allows you to specify a window of time, relative to the time the Task Monitor task launched, during which the conditions of the Task Monitor must be met. If the conditions are not met within the specified window, the Task Monitor task goes to a FAILED status.</p> <p>If the conditions in the Task Monitor task are met before the Time Scope <a href="#">To</a> time arrives, the Task Monitor task goes to SUCCESS. If the conditions are not met by the Time Scope <a href="#">To</a> time, the Task Monitor task goes to FAILED status.</p>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>

<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>



Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
Workflow Only	Specification for whether or not to apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.  Options are: <ul style="list-style-type: none"> <li>• -- System Default -- Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications as defined by the <a href="#">System Default Wait/Delay Workflow Only</a> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</li> <li>• No Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications whether or not the task is in a Workflow.</li> </ul>
<b>Time Options</b>	This section contains time-related specifications for task instances of the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for task instances of the task.
First Time Ran	System-supplied; date and time this task first ran.

<b>Last Time Ran</b>	System-supplied; date and time the task last ran.
<b>Last Instance Duration</b>	System-supplied; amount of time the task took to run the last time it ran.
<b>Lowest Instance Time</b>	System-supplied; shortest amount of time this task has taken to run.
<b>Average Instance Time</b>	System-supplied; average amount of time this task takes to run.
<b>Highest Instance Time</b>	System-supplied; longest amount of time this task has taken to run.
<b>Number of Instances</b>	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" data-bbox="266 478 1484 840"> <tr> <td data-bbox="266 478 412 548"><b>Abort Action</b></td> <td data-bbox="412 478 1484 548">Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td data-bbox="266 548 412 617"><b>Email Notification</b></td> <td data-bbox="412 548 1484 617">Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td data-bbox="266 617 412 686"><b>Set Variable</b></td> <td data-bbox="412 617 1484 686">Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td data-bbox="266 686 412 756"><b>SNMP Notification</b></td> <td data-bbox="412 686 1484 756">Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td data-bbox="266 756 412 825"><b>System Operation</b></td> <td data-bbox="412 756 1484 825">Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
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<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of this Workflow.										
<b>Task Monitor Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## Viewing a Task Monitor Task Instance

When a Task Monitor task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [Task Monitor Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

### Task Monitor Task Instance Details

The following Task Monitor Task Instance Details contains information on the execution of the task shown in the [Task Monitor Task Details](#).


### Task Monitor Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Task Monitor Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.

Invoked by	<p>System-supplied; how the task instance was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Trigger: (Trigger Name)</b> Instance was launched by the named trigger.</li> <li>• <b>Workflow: (Workflow Name)</b> Instance was launched by the named workflow.</li> <li>• <b>Manually Launched</b> Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	<p>Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.</p> <p>Options: 1 (high) - 20 (low).</p> <p>Default is 10.</p>
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.

Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Trigger	Trigger, if any, on whose behalf the Task Monitor task is monitoring other tasks.
Task Instance Matched	Last task that matched the specifications of the task(s) being monitored.
<b>Task Monitor Details</b>	This section contains assorted detailed information about the task instance.
Status To Monitor	Status being monitored for. When the task being monitored goes to a status specified in this field, the associated trigger is satisfied and the tasks specified in the trigger launch. You can specify status only, or status and exit code. You can specify as many statuses as needed (see <a href="#">Task Statuses</a> ).
Monitoring Type	Specifies which task or tasks are being monitored.  Options: <ul style="list-style-type: none"> <li>• Specific Task - One task is being monitored. Use the <a href="#">Task to Monitor</a> field to specify the task name.</li> <li>• General Tasks - Allows you to specify selection parameters that determine which task or tasks to be monitored. Use the <a href="#">Task Name Condition</a> and <a href="#">Task Type to Monitor</a> fields to create your selection parameters.</li> </ul>
Task to Monitor	If <a href="#">Monitoring Type</a> = Specific Task; specifies the task to monitor. Enter a task name or select a task from the drop-down list. To display details about a task on the list, select it and then click the Task To Monitor icon.
Task Name Condition	If <a href="#">Monitoring Type</a> = General Task(s); specifies a type of condition for the name of tasks being monitored for. If you select a condition type, a corresponding field displays that allows you to enter a value for that condition. Only tasks meeting the specified condition value will be monitored for.  Options: <ul style="list-style-type: none"> <li>• -- None --</li> <li>• Starts With</li> <li>• Contains</li> <li>• Ends With</li> </ul>
Task Name Starts With	If <a href="#">Task Name Condition</a> = Starts With; character string at the start of the name of a task or tasks being monitored for.
Task Name Contains	If <a href="#">Task Name Condition</a> = Contains; character string in the name of a task or tasks being monitored for.
Task Name Ends With	If <a href="#">Task Name Condition</a> = Ends With; character string at the end of the name of a task or tasks being monitored for.

<p>Workflow Name Condition</p>	<p>Type of condition for the name of a workflow or workflows containing the task being monitored for. If you select a condition type, a corresponding field displays that allows you to enter a value for that condition.</p> <p>Only tasks in workflows meeting the specified condition value will be monitored for.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• - - None - -</li> <li>• Equals</li> <li>• Starts With</li> <li>• Contains</li> <li>• Ends With</li> </ul>
<p>Workflow Name Equals</p>	<p>If <a href="#">Workflow Name Condition</a> = Equals; exact name of a workflow or workflows containing the task being monitored for.</p>
<p>Workflow Name Starts With</p>	<p>If <a href="#">Workflow Name Condition</a> = Starts With; character string at the start of the name of a workflow or workflows containing the task being monitored for.</p>
<p>Workflow Name Contains</p>	<p>If <a href="#">Workflow Name Condition</a> = Contains; character string in the name of a workflow or workflows containing the task being monitored for.</p>
<p>Workflow Name Ends With</p>	<p>If <a href="#">Workflow Name Condition</a> = Ends With; character string at the end of the name of a workflow or workflows containing the task being monitored for.</p>
<p>Time Scope</p>	<p>Used for Task Monitor tasks not associated with a trigger. The Time Scope fields are used to create a window during which the Task Monitor conditions must be met in order for the Task Monitor to be satisfied. The Time Scope window is always relative to the time that the Task Monitor launched. For example, if you put -01:00 in the <a href="#">From</a> time field and 02:00 in the <a href="#">To</a> time field, the window's begin time is one hour before the Task Monitor is launched and its end time is two hours after it is launched.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b> The task being monitored still must be in the <a href="#">Activity Monitor</a> in order for you to monitor for events that occurred in the past. If you specify a window that begins in the past, when the Task Monitor launches, it searches through the <a href="#">All Task Instances table</a> (ops_exec) for the specified event. If it locates the event, the Task Monitor is satisfied immediately.</p> </div>
<p>From [+/-]hh:mm:</p>	<p>If <a href="#">Time Scope</a> = Relative; used for Task Monitor tasks not associated with a trigger. Together with the <a href="#">To</a> field, it allows you to specify a window of time, relative to the time the Task Monitor task launched, during which the conditions of the Task Monitor must be met. If the conditions are not met within the specified window, the Task Monitor task goes to a FAILED status.</p> <p>If you specify a past time in the this field, as soon as the Task Monitor task launches, the Controller searches the Activity table for past events that match the specified conditions. If the conditions are satisfied already, the Task Monitor task goes immediately to SUCCESS status. Otherwise, the Controller continues monitoring until the conditions are met or until the <a href="#">To</a> time has passed.</p>
<p>To [+/-]hh:mm:</p>	<p>If <a href="#">Time Scope</a> = Relative; used for Task Monitor tasks not associated with a trigger. This field, together with the Time Scope <a href="#">From</a> field, allows you to specify a window of time, relative to the time the Task Monitor task launched, during which the conditions of the Task Monitor must be met. If the conditions are not met within the specified window, the Task Monitor task goes to a FAILED status.</p> <p>If the conditions in the Task Monitor task are met before the Time Scope <a href="#">To</a> time arrives, the Task Monitor task goes to SUCCESS. If the conditions are not met by the Time Scope <a href="#">To</a> time, the Task Monitor task goes to FAILED status.</p>
<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>



<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>

Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.

Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Average Estimated End Time	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.

<b>Shortest Estimated End Time</b>	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Longest Estimated End Time</b>	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Projected End Time</b>	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## File Monitor Task

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- Processing Flow for File Monitors
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### Overview

The File Monitor task allows you to monitor a specific remote machine for the creation, deletion, change, existence, or non-existence of one or more files at a specific location. In order to run a File Monitor task, you need Universal Agent for Windows, Linux/Unix, or z/OS running on the machine where you are monitoring for the file.

### Processing Flow for File Monitors

File Monitor tasks are meant to be launched either by using a [File Monitor trigger](#) or by being included within a Workflow. However, there are no technical restrictions on how a File Monitor task can be launched. The processing may differ depending on which of the following methods was used to launch it:

- Launched by a Workflow
- Launched by a File Monitor trigger
- Launched manually or by another trigger type

The processing on a File Monitor task for each launching method is described below.



#### Note

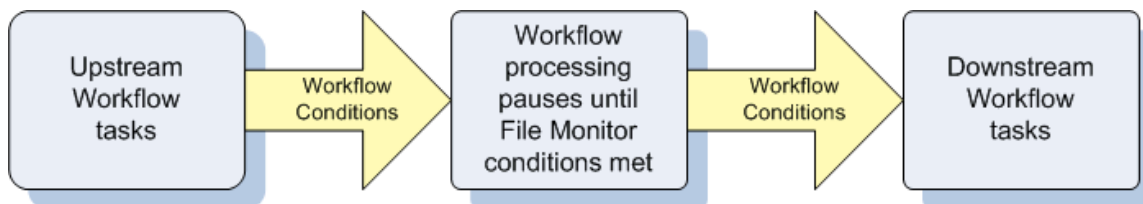
Any changes made to a File Monitor task are not recognized by its respective Triggers until those Triggers are disabled and re-enabled.

### Launching a File Monitor Task Within a Workflow

The File Monitor task can be launched within a [Workflow](#).

In this scenario, the task launches when the upstream workflow conditions are satisfied. Workflow processing then pauses until the conditions in the File Monitor task are satisfied. If the File Monitor is watching for the creation, change, or deletion of a file, the task goes to SUCCESS when the event occurs. If the File Monitor is watching for the existence or non-existence of a file, the task immediately goes to SUCCESS or FAILURE. Subsequent processing depends on the conditions built into the Workflow.

The following diagram illustrates the processing for this scenario.



### Launching a File Monitor Task Using a File Monitor Trigger

A common use for the File Monitor task is to launch it using a [File Monitor trigger](#), which specifies one or more tasks that are launched when a

condition(s) is satisfied.

In this scenario, the File Monitor task launches when its associated File Monitor trigger is enabled.



**Note**

You should use a File Monitor trigger to launch only File Monitor tasks that specify a single Agent, not an Agent Cluster. A File Monitor trigger can launch only a single task, not multiple tasks, which would be the case if an Agent Cluster was specified.

This method is best geared toward watching for the creation, deletion, or change in files. When the conditions in the File Monitor task are satisfied, the File Monitor task goes to SUCCESS and the tasks listed in the associated trigger are launched. The File Monitor task continues running until its conditions are satisfied or until the user disables the trigger.

If you use this method to check for the existence or non-existence of a file, as soon as the task is launched it goes to SUCCESS or FINISHED status. If it goes to SUCCESS, the tasks specified in the trigger are launched. A FINISHED status indicates that it found a file that shouldn't be there or didn't find a file that should be there. Both of these cases constitute a "failure" of the conditions and therefore the tasks in the trigger are not launched.

When the File Monitor task goes to FINISHED or SUCCESS, the associated File (Monitor) trigger is automatically disabled.

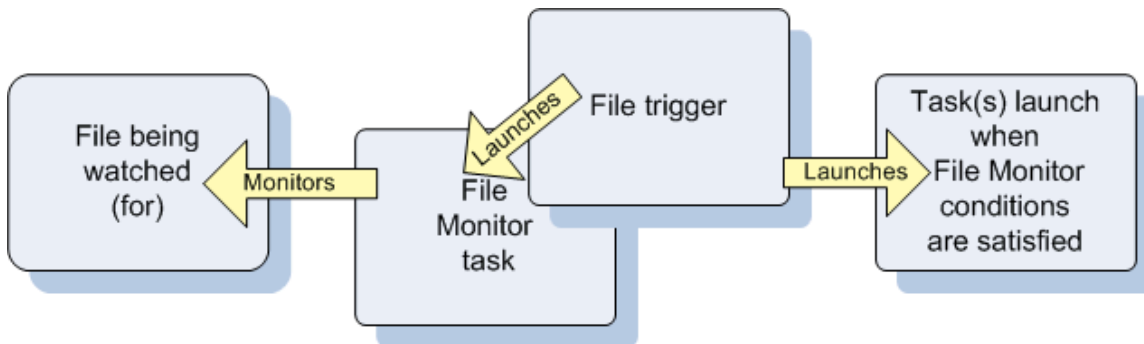


**Note**

Using a File Monitor trigger to trigger a File Monitor task that is monitoring for the creation of one or more files (Monitor Type = Exists) will disable the trigger. You should instead specify (Monitor Type = Create) and check Trigger on Existence.

When you launch a File Monitor task from a File trigger, you cannot manually cancel or force finish the task. You can only stop the task by disabling the trigger. If you manually disable the trigger while the task is still running, the task goes to FINISHED status.

The diagram below illustrates the processing flow for this scenario.



### Launching a File Monitor Task Manually or Via Other Trigger

If you manually launch a File Monitor task or launch it using a non-File Monitor trigger, such as a Time trigger, the task continues running until its specified conditions are met, at which time the task goes to SUCCESS. No other processing occurs unless you have configured notifications with the task or set up some other task(s) to launch based on the status of this task.

If the conditions are not met, the task runs perpetually or until a user issues a Cancel or Force Finish command against it.

### Built-In Variables

The following built-in variables can be used in a File Monitor task to pass data where appropriate:

- Task Instance variables
- Agent-Based Task Instance variables
- File Monitor Task variables

### Creating a File Monitor Task

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > File Monitor Tasks**. The File Monitor Tasks list displays a list of all currently defined File Monitor tasks.

Below the list, File Monitor Task Details for a new File Monitor task displays.

The screenshot shows the 'File Monitors' interface. At the top, there is a tab labeled 'File Monitors' and a dropdown menu showing '5 File Monitors'. Below this is a table with columns: Task Name, Task Description, Monitor Type, Updated By, and Updated. The table contains five entries, all with 'Create' as the Monitor Type and 'ops.admin' as the Updated By. Below the table is a 'File Monitor Details' section with tabs for 'File Monitor', 'Variables', 'Actions', 'Virtual Resources', 'Mutually Exclusive', 'Instances', 'File Monitor Triggers', 'Notes', and 'Versions'. The 'File Monitor' tab is active, showing a 'General' section with fields for Task Name, Version (1), Task Description, Member of Business Services, Hold on Start, Virtual Resource Priority (10), and Hold Resources on Failure. Below this is a 'File Monitor Details' section with fields for Agent, Agent Cluster, Agent Variable, Credentials, and Cluster Broadcast.

**Step 2** Enter/select Details for a new File Monitor task, using the field descriptions below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## File Monitor Task Details

The following File Monitor Task Details is for an existing File Monitor task.

Depending on the values that you enter / select for these fields, and whether or not the File Monitor task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the File Monitor Task Details.

The screenshot shows the 'File Monitor Details: stonebranch-filemonitor-01' window. It features a top toolbar with buttons for Update, Launch Task, View Parents, Copy, Delete, Refresh, and Close. Below the toolbar are tabs for File Monitor, Variables, Actions, Virtual Resources, Mutually Exclusive, Instances, File Monitor Triggers, Notes, and Versions. The main content area is divided into several sections:

- General:** Task Name (stonebranch-filemonitor-01), Version (4), Task Description, Member of Business Services (stonebranchbusinessservice 01), Hold on Start checkbox, Virtual Resource Priority (10), and Hold Resources on Failure checkbox.
- File Monitor Details:** Agent (DVZOS111 - NAHZOS52), Agent Cluster, Agent Variable checkbox, Agent Cluster Variable checkbox, Credentials (stonebranch-credential-01), Cluster Broadcast, Monitor Type (Create), Trigger on Existence checkbox, Monitor File(s) (file 1), Use Regular Expression checkbox, Recursive checkbox, Maximum Files, File Owner, Stable (seconds), and Scan Text.
- Wait/Delay Options:** Wait To Start, Delay On Start, and Workflow Only dropdown menus.
- Time Options:** Late Start, Late Finish, and Early Finish checkboxes, and User Estimated Duration with Day, Hour, Min, and Sec dropdowns.
- Critical Path Options:** CP Duration and CP Duration Unit (Minutes) dropdown.


A second toolbar at the bottom contains buttons for Update, Launch Task, View Parents, Copy, Delete, Refresh, and Close.



## File Monitor Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the File Monitor Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.



Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions</a> tab to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>File Monitor Details</b>	This section contains assorted detailed information about the task.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .
Agent Variable	Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in <a href="#">Variables and Functions</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When updating multiple Tasks, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.


Agent Cluster Variable	<p>Indication of whether the <a href="#">Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
Cluster Broadcast	<p>Group of Agents, all of which will run this task (compare with Agent Cluster). You can specify a Cluster Broadcast in place of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.</p>
Credentials	<p><a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.</p>
Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Monitor Type	<p>Type of file event being monitored for.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Create - Wait for the creation of one or more files.</li> <li>• Delete - Wait for the deletion of one or more files.</li> <li>• Change - Monitor for a change in one or more files. <b>[NOTE: not supported for z/OS.]</b></li> <li>• Exists - Check to see if one or more files already exist.</li> <li>• Missing - Check to see if one or more files are missing.</li> </ul>
Trigger on Existence	<p>If <a href="#">Monitor Type</a> = Create; task is triggered if the file being monitored for creation already exists.</p>
Monitor File(s)	<p>Location and name of a specific file or file pattern (for example, ACT001*) being monitored. <a href="#">Variables</a> supported. <a href="#">Wildcards</a> supported.</p>
Use Regular Expression	<p>Enables the use of a <a href="#">regular expression</a> in the <a href="#">Monitor File(s)</a> field.</p>
Recursive	<p>If enabled, the monitor searches the specified directory and all subdirectories.</p>
Maximum Files	<p>If <a href="#">Monitor Type</a> = Create, Delete, or Change; For searches that use wildcards, limits the number of files to be searched.</p>

File Owner	If <b>Monitor Type</b> = Create, Delete, Change, or Exists; User name / group name of the owner of the file on the operating system; that is, the user name / group name returned by the operating system in the file ownership information. LDAP groups are supported. Specifying a file owner limits the search to files with that owner.
Stable (seconds)	If <b>Monitor Type</b> = Change or Create: Period of time, in seconds, during which the file has not changed.
By Percentage (+/-)	If <b>Monitor Type</b> = Change, the amount that the file size has changed, expressed as a percentage of the original file size. For example, enter 10 to monitor for a change in file size of 10 percent (larger or smaller).
By Size (+/-)	If <b>Monitor Type</b> = Change, used in conjunction with the By scale field, specifies an actual change in file size. For example, to monitor for a change in file size of 10 MB, enter 10 in this field and select MB in the By scale field.
By Scale	If <b>Monitor Type</b> = Change, used in conjunction with the By Size field, specifies Bytes, KB (kilobytes), or MB (megabytes). For example, to monitor for a change in file size of 10MB, enter 10 in the <b>By Size</b> field and select MB in this field.
To Size	If <b>Monitor Type</b> = Change, used in conjunction with the To Scale field, specifies an actual file size that you want to monitor for. For example, to monitor for a file size of 5KB, enter 5 in this field and select KB in the To scale field.
To Scale	If <b>Monitor Type</b> = Change, used in conjunction with the To Size field, specifies an actual file size that you want to monitor for. For example, to monitor for a file size of 5KB, enter 5 in the To Size field and select KB in this field.
Scan Text	If <b>Monitor Type</b> = Create, Change, or Exists; string that the monitor will search for in the file or files. Specifying a string means that only files containing the string constitute a match. The Controller will process this field as a regular expression.  The result (string is found or not found) is set in the <b>Trigger File Scan Result</b> built-in variable.
Scan Forward	If <b>Monitor Type</b> = Change; if enabled, this field specifies that once the File Monitor has been satisfied, it should continue from where it left off. If it is scanning within a file, it should resume from the point in the file that it last scanned. If it is monitoring for files, it should resume monitoring for the next file.  If you are scanning a file that is being overwritten each time and you want to start from the beginning each time, you should disable Scan Forward.
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched.  Options are: <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p>Workflow Only</p>	<p>Specification for whether or not to apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• -- System Default -- Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications as defined by the <b>System Default Wait/Delay Workflow Only</b> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</li> <li>• No Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications whether or not the task is in a Workflow.</li> </ul>

<b>Time Options</b>	This section contains time-related statistics for task instances of the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.

Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for task instances of the task.</p>
First Time Ran	<p>System-supplied; date and time this task first ran.</p>
Last Time Ran	<p>System-supplied; date and time the task last ran.</p>
Last Instance Duration	<p>System-supplied; amount of time the task took to run the last time it ran.</p>
Lowest Instance Time	<p>System-supplied; shortest amount of time this task has taken to run.</p>

<b>Average Instance Time</b>	System-supplied; average amount of time this task takes to run.
<b>Highest Instance Time</b>	System-supplied; longest amount of time this task has taken to run.
<b>Number of Instances</b>	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b>                      You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" data-bbox="266 478 1484 840"> <tr> <td data-bbox="266 478 410 548"><b>Abort Action</b></td> <td data-bbox="410 478 1484 548">Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td data-bbox="266 548 410 617"><b>Email Notification</b></td> <td data-bbox="410 548 1484 617">Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td data-bbox="266 617 410 686"><b>Set Variable</b></td> <td data-bbox="410 617 1484 686">Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td data-bbox="266 686 410 756"><b>SNMP Notification</b></td> <td data-bbox="410 686 1484 756">Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td data-bbox="266 756 410 825"><b>System Operation</b></td> <td data-bbox="410 756 1484 825">Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
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<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of this Workflow.										
<b>File Monitor Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## Viewing a File Monitor Task Instance

When a File Monitor task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [File Monitor Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

### File Monitor Task Instance Details

The following File Monitor Task Instance Details contains information on the execution of the task shown in the [File Monitor Task Details](#).



The screenshot displays the 'File Monitor Instance Details' for 'stonebranch-filemonitor-01'. The interface includes a toolbar with actions like Update, Re-run, View Parent, Retrieve Output..., Delete, Refresh, and Close. The main content is organized into several sections:



- General:** Instance Name (stonebranch-filemonitor-01), Reference Id (1), Task (stonebranch-filemonitor-01), Invoked By (Manually Launched), Member of Business Services, Execution User (stonebranch-user-01), Virtual Resource Priority (10), and Hold Resources on Failure.
- Status:** Status (Success), Exit Code (0), Status Description, Operational Memo, Wait Until Time (2015-05-08 10:09:49 -0400), Queued Time (2015-02-06 14:45:37 -0500), Trigger Time, Start Time (2015-02-06 14:45:41 -0500), Launch Time (2015-02-06 14:45:37 -0500), End Time (2014-06-20 13:09:49 -0400), and Duration (46 Seconds).
- File Monitor Details:** agentId, Agent Cluster, Agent Variable, Credentials, Credentials Variable, Monitor Type (Delete), Monitor File(s) (TEMPFILE), Use Regular Expression, Recursive, Maximum Files, and File Owner.
- Wait/Delay Options:** Wait To Start (Seconds), Wait Duration In Seconds (30), Delay On Start (Seconds), and Delay Duration In Seconds (30).
- Critical Path Options:** CP Duration and CP Duration Unit (Minutes).
- Statistics:** User Estimated End Time, Average Estimated End Time (2014-06-27 09:26:59 -0400), Shortest Estimated End Time, and Longest Estimated End Time.


### File Monitor Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in File Monitor Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.

Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	<p>System-supplied; how the task instance was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	<p>Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.</p> <p>Options: 1 (high) - 20 (low).</p> <p>Default is 10.</p>
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.

Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
<b>File Monitor Details</b>	This section contains assorted detailed information about the task instance.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .
Agent Variable	<p>Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.
Agent Cluster Variable	<p>Indication of whether the <a href="#">Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
Cluster Broadcast	Group of Agents, all of which will run this task (compare with Agent Cluster). You can specify a Cluster Broadcast in place of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.

Credentials	<a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.
Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Monitor Type	<p>Type of file event being monitored for.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Create - Wait for the creation of one or more files.</li> <li>• Delete - Wait for the deletion of one or more files.</li> <li>• Change - Monitor for a change in one or more files. [<b>NOTE:</b> not supported for z/OS.]</li> <li>• Exists - Check to see if one or more files already exist.</li> <li>• Missing - Check to see if one or more files are missing.</li> </ul>
Trigger on Existence	If <a href="#">Monitor Type</a> = Create; task is triggered if the file being monitored for creation already exists.
Monitor File(s)	Location and name of a specific file or file pattern (for example, ACT001*) being monitored. <a href="#">Variables</a> supported. <a href="#">Wildcards</a> supported.
Use Regular Expression	Enables the use of a <a href="#">regular expression</a> in the <a href="#">Monitor File(s)</a> field.
Recursive	If enabled, the monitor searches the specified directory and all subdirectories.
Maximum Files	If <a href="#">Monitor Type</a> = Create, Delete, or Change; For searches that use wildcards, limits the number of files to be searched.
File Owner	If <a href="#">Monitor Type</a> = Create, Delete, Change, or Exists; User name / group name of the owner of the file on the operating system; that is, the user name / group name returned by the operating system in the file ownership information. LDAP groups are supported. Specifying a file owner limits the search to files with that owner.
Stable (seconds)	If <a href="#">Monitor Type</a> = Change or Create: Period of time, in seconds, during which the file has not changed.
By Percentage (+/-)	If <a href="#">Monitor Type</a> = Change, the amount that the file size has changed, expressed as a percentage of the original file size. For example, enter 10 to monitor for a change in file size of 10 percent (larger or smaller).
By Size (+/-)	If <a href="#">Monitor Type</a> = Change, used in conjunction with the By scale field, specifies an actual change in file size. For example, to monitor for a change in file size of 10 MB, enter 10 in this field and select MB in the By scale field.

By Scale	<p>If <b>Monitor Type</b> = Change, used in conjunction with the By Size field, specifies Bytes, KB (kilobytes), or MB (megabytes). For example, to monitor for a change in file size of 10MB, enter 10 in the <b>By Size</b> field and select MB in this field.</p>
To Size	<p>If <b>Monitor Type</b> = Change, used in conjunction with the To Scale field, specifies an actual file size that you want to monitor for. For example, to monitor for a file size of 5KB, enter 5 in this field and select KB in the To scale field.</p>
To Scale	<p>If <b>Monitor Type</b> = Change, used in conjunction with the To Size field, specifies an actual file size that you want to monitor for. For example, to monitor for a file size of 5KB, enter 5 in the To Size field and select KB in this field.</p>
Scan Text	<p>If <b>Monitor Type</b> = Create, Change, or Exists; string that the monitor will search for in the file or files. Specifying a string means that only files containing the string constitute a match. The Controller will process this field as a regular expression.</p> <p>The result (string is found or not found) is set in the <b>Trigger File Scan Result</b> built-in variable.</p>
Scan Forward	<p>If <b>Monitor Type</b> = Change; if enabled, this field specifies that once the File Monitor has been satisfied, it should continue from where it left off. If it is scanning within a file, it should resume from the point in the file that it last scanned. If it is monitoring for files, it should resume monitoring for the next file.</p> <p>If you are scanning a file that is being overwritten each time and you want to start from the beginning each time, you should disable Scan Forward.</p>
<b>Wait / Delay Options</b>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
Wait To Start	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p><b>Time Options</b></p>	<p>This section contains time-related specifications for the task instance.</p>
<p>Late Start</p>	<p>If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a>). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <b>Started Late</b> field; the field is checked if the instance started after the specified time. The <b>Started Late</b> field displays in the task instance Details only if the user specified a Late Start in the task Details.</p>
<p>Started Late</p>	<p>System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.</p>

Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>

Early Finish Time	If <b>Early Finish Type</b> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <b>Early Finish Type</b> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <b>CP Duration Unit</b> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <b>CP Duration</b> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The <b>CP Duration (Resolved)</b> field can continue to change value until the task instance starts, at which time <b>CP Duration</b> will display as resolved and <b>CP Duration (Resolved)</b> will no longer be visible unless there was an issue resolving the variables and/or functions contained within <b>CP Duration</b> . If the Controller is unable to resolve <b>CP Duration</b> or it resolves to an invalid value, <b>CP Duration</b> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <b>CP Duration</b> field. For example, for a CP Duration of two minutes, specify 2 in the <b>CP Duration</b> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <b>User Estimated Duration</b> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Average Estimated End Time	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Longest Estimated End Time	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <b>critical path duration</b> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.



<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Output</b>	Displays output generated from the process, if any, based on specifications provided by the user in the Monitor Type fields in the task Details. Output also can be obtained by clicking the <a href="#">Retrieve Output</a> button.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

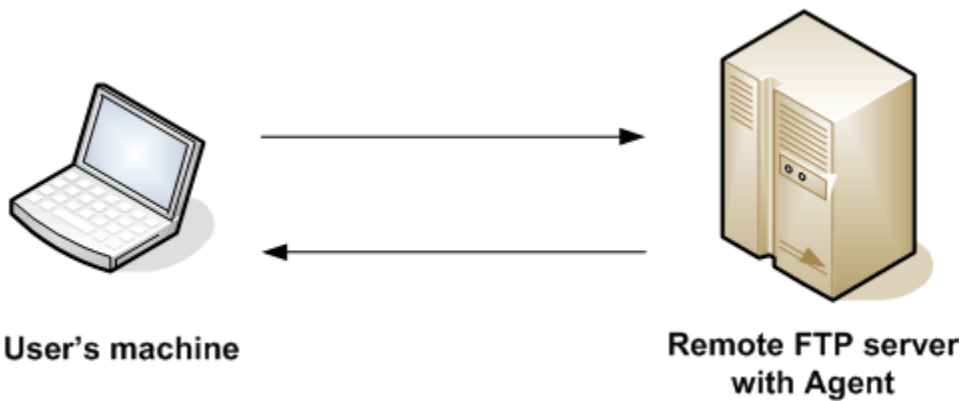
## FTP File Monitor Task

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### Overview

The FTP File Monitor task allows you to monitor for a file on a remote machine where an FTP server is running. The FTP File Monitor connects to the FTP server rather than the machine's file system to monitor for files. The FTP File Monitor can be used only within a workflow; you cannot run a FTP File Monitor task based on a trigger. To run an FTP File Monitor task, you need Universal Agent to communicate with the FTP server. The Agent can, but does not have to be, running on the same machine as the FTP server.

In the following example, the user wants to monitor for a file on a remote FTP Server that has an Agent running on it. In this case, the login credentials for the Agent machine and the FTP server machine are the same.



In the following example, the user wants to monitor for a file on a remote FTP Server that does not have an Agent running on it. In this case, the FTP File Monitor task definition provides an address and login credentials for the machine where the Agent is running as well as address and login credentials for the FTP server.



### Built-In Variables

The following built-in variables can be used in an FTP File Monitor task to pass data where appropriate:

- [Task Instance variables](#)
- [Agent-Based Task Instance variables](#)

- [FTP File Monitor Task variables](#)

## Creating an FTP File Monitor Task

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > FTP File Monitor Tasks**. The FTP File Monitor Tasks list displays a list of all currently defined FTP File Monitor tasks.

Below the list, FTP File Monitor Task Details for a new FTP File Monitor task displays.

The screenshot shows the 'FTP File Monitors' interface. At the top, there is a list of 5 FTP File Monitors. Below the list, the 'FTP File Monitor Details' section is visible, showing fields for General and FTP File Monitor Details.

Task Name	Task Description	Monitor Type	Updated By	Updated
stonebranch-ftpfilemonitortask-01		Exists	ops.admin	2014-06-13 14:21:21 -0400
stonebranch-ftpfilemonitortask-02		Exists	ops.admin	2014-06-13 14:21:29 -0400
stonebranch-ftpfilemonitortask-03		Exists	ops.admin	2014-06-13 14:21:33 -0400
stonebranch-ftpfilemonitortask-04		Exists	ops.admin	2014-06-13 14:21:38 -0400
stonebranch-ftpfilemonitortask-05		Exists	ops.admin	2014-06-13 14:21:42 -0400

**FTP File Monitor Details**

**General**

Task Name :  Version :

Task Description :

Member of Business Services :

Hold on Start :

Virtual Resource Priority :  Hold Resources on Failure :

**FTP File Monitor Details**

Agent :  Agent Cluster :

Agent Variable :  Agent Cluster Variable :

Credentials :  Cluster Broadcast :

Credentials Variable :

**Step 2** Enter/select Details for a new FTP File Monitor task, using the [field descriptions](#) below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To **open** an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the **Details icon** next to a record name in the list, or right-click a record in the list and then click **Open** in the **Action menu** that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the **Action menu** that displays, to display the record Details under a new tab on the record list page (see **Record Details as Tabs**).

## FTP File Monitor Task Details

The following FTP File Monitor Task Details is for an existing File Monitor task.

Depending on the values that you enter / select for these fields, and whether or not the FTP File Monitor task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the FTP File Monitor Task Details.

The screenshot shows the 'FTP File Monitor Details' configuration window. The title bar reads 'FTP File Monitor Details: stonebranch-ftpfilemonitortask-01'. The window has a menu bar with 'Update', 'Launch Task', 'View Parents', 'Copy', 'Delete', 'Refresh', and 'Close'. Below the menu bar are tabs for 'Variables', 'Actions', 'Virtual Resources', 'Mutually Exclusive', 'Instances', 'Triggers', 'Notes', and 'Versions'. The main content area is divided into several sections:



- General:** Includes 'Task Name' (stonebranch-ftpfilemonitortask-01), 'Version' (1), 'Task Description', 'Member of Business Services' (stonebranchbusinessservice 01), 'Hold on Start' checkbox, 'Virtual Resource Priority' (10), and 'Hold Resources on Failure' checkbox.
- FTP File Monitor Details:** Includes 'Agent' (stonebranch-agent-01), 'Agent Cluster', 'Agent Variable', 'Agent Cluster Variable', 'Credentials' (stonebranch-credential-01), 'Cluster Broadcast', 'Credentials Variable', 'Monitor Type' (Exists), 'Wait until Satisfied' checkbox, 'Server Type' (FTP), 'List Format Options', 'Transfer Mode' (Passive), 'Remote Server' (server 1), 'FTP Credentials' (stonebranch-credential-02), 'FTP Credentials Variable', 'Remote Filename' (file 1), 'Use Regular Expression' checkbox, and 'Job Card (z/OS only)'.
- Wait/Delay Options:** Includes 'Wait To Start' (None --), 'Delay On Start' (None --), and 'Workflow Only' (System Default --).
- Time Options:** Includes 'Late Start', 'Late Finish', 'Early Finish' checkboxes, and 'User Estimated Duration' (Day, Hour, Min, Sec).
- Critical Path Options:** Includes 'CP Duration' and 'CP Duration Unit' (Minutes).


At the bottom of the window are buttons for 'Update', 'Launch Task', 'View Parents', 'Copy', 'Delete', 'Refresh', and 'Close'.

### FTP File Monitor Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the FTP File Monitor Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Task Description	User-defined; description of this record. (Maximum = 200 characters.)


Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	<p>Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.</p> <p>Options: 1 (high) - 20 (low).</p> <p>Default is 10.</p>
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>File Monitor Details</b>	This section contains assorted detailed information about the task.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .
Agent Variable	<p>Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.
Agent Cluster Variable	<p>Indication of whether the <a href="#">Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Agent Cluster</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>

Cluster Broadcast	Group of Agents, all of which will run this task (compare with Agent Cluster). You can specify a Cluster Broadcast in place of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.
Credentials	<a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.
Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Monitor Type	<p>Type of file event being monitored for.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Exists - Checks to see if the file exists.</li> <li>• Missing - Checks to see if the file does not exist.</li> </ul>
Wait until Satisfied	<p>If enabled, the task instance starts and continues to run until one of the following events occurs:</p> <ul style="list-style-type: none"> <li>• If <a href="#">Monitor Type</a> = Exists and the specified file exists or appears, the task instance completes with a status of SUCCESS.</li> <li>• If <a href="#">Monitor Type</a> = Missing and the specified file does not exist or exists then disappears, the task instance completes with a status of SUCCESS.</li> </ul> <p>If not enabled, the task instance:</p> <ol style="list-style-type: none"> <li>1. Starts.</li> <li>2. Checks for the existence of the file.</li> <li>3. Takes one of the following actions:             <ul style="list-style-type: none"> <li>• If <a href="#">Monitor Type</a> = Exists and if the file exists, the task instance completes with a status of SUCCESS.</li> <li>• If <a href="#">Monitor Type</a> = Exists and if the file does not exist, the task instance completes with a status of FAILURE.</li> <li>• If <a href="#">Monitor Type</a> = Missing and if the file exists, the task instance completes with a status of FAILURE.</li> <li>• If <a href="#">Monitor Type</a> = Missing and if the file does not exist, the task instance completes with a status of SUCCESS.</li> </ul> </li> </ol>
Poll Interval (Seconds)	If <a href="#">Wait until Satisfied</a> is enabled: Frequency, in seconds, in which the FTP File Monitor will check to see if the file exists or is missing.
Maximum Polls	If <a href="#">Wait until Satisfied</a> is enabled: Maximum number of times that the FTP File Monitor will check to see if the file exists or is missing.

<p>Stable (Seconds)</p>	<p>If <a href="#">Wait until Satisfied</a> is enabled: Period of time, in seconds, during which the file has not changed.</p> <p>For an FTP/SFTP File Monitor task, a file's stability depends on its size. If the file size displayed in the FTP/SFTP output does not change during the specified number of seconds, the file is considered stable. In order for the task to reliably monitor the file's stability, the task must display a file's size in a well-known location. This means that the file list returned in the output must be in Unix long-listing format, as follows:</p> <div data-bbox="360 329 1445 417" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <pre style="font-family: monospace;">-rwxr-xr-x 1 owner group 12345 Jan 1 2012 somefile.txt</pre> </div> <p>The task will only find the size if it is in the 5th column (for example, 12345 in the example above).</p> <p>The default file list format varies across different FTP client/server implementations, but most support additional commands that can force the output to the required format. The <a href="#">List Format Options</a> field is provided to insert those statements into the FTP script that the file monitor task executes.</p>
<p>Server Type</p>	<p>Type of FTP server.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• FTP</li> <li>• SFTP</li> </ul>




<p>List Format Options</p>	<p>If <a href="#">Server Type</a> is FTP: Allows you to add statements to the FTP script that control the format of the file list returned by the FTP task. The Agent depends on the file list being in Unix "long" format (that is, what you would see if you entered "ls -l" from the command shell) in order to correctly and reliably parse out file name and size (when a <a href="#">Stable</a> period is specified). If the FTP Server is configured to return a different format, the Server may support commands that alter the format.</p> <p>For example, the following statements may be used for an FTP File Monitor task executing against an IBM iSeries (AS/400) FTP Server to ensure a correctly-formatted file list:</p> <pre style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;">site listfmt 1 site namefmt 1</pre> <p>If the FTP File Monitor task is executing against a Microsoft FTP Server and that Server is configured to return a file list in DOS format, the following statement will toggle the format to a Unix-style listing.</p> <pre style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;">site dirstyle</pre> <p>Not all FTP client/server implementations provide statements that can alter the format of the <b>ls</b> command, which the FTP File Monitor task issues to generate the file listing. However, those implementations may support the <b>dir</b> command, which can return the file list in the correct format. If the <b>dir</b> command is specified in the List Format Options field, the FTP File Monitor task will use the results from that command to obtain the file sizes. In such cases, the FTP script will contain the <b>dir</b> and <b>ls</b> commands, but since statements in the List Format Options field are inserted into the script prior the <b>ls</b> command, the results from the <b>dir</b> command are parsed first.</p> <p>If the <b>dir</b> command is necessary to obtain the correct file list format, simply specify that command along with the same value specified in the <a href="#">Remote Filename</a> field. For example, if <a href="#">Remote Filename</a> is <code>/uagtests/data/somefile*.txt</code>, enter the following in this field:</p> <pre style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;">dir /uagtests/data/somefile*.txt</pre> <p>This statement also can be used with other commands to get the correct output. For example, if a Windows FTP Server is configured to return file lists in Windows format, use <b>site</b> and <b>dir</b> commands together in this field:</p> <pre style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;">site dirstyle dir /uagtests/data/somefile*.txt</pre> <p>Invalid statements or valid statements that do not control the file list format are ignored.</p>
<p>Transfer Mode</p>	<p>Transfer mode.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Active</li> <li>• Passive</li> <li>• Extended Passive</li> </ul>
<p>Remote Server</p>	<p>Name or IP address of the remote server. This machine may or may not be the same as the Universal Agent machine.</p> <p>You also can specify a non-standard FTP or SFTP port:</p> <ul style="list-style-type: none"> <li>• For FTP, specify the port number separated from the host name with a space: "some.server.com 2222".</li> <li>• For SFTP, specify the port number separated from the host name with a colon: "some.server.com:2222".</li> </ul>

FTP Credentials	Login credentials that the Agent will use to access the FTP or SFTP server machine. If the FTP File Monitor server and Agent are running on the same machine, enter the same credentials as those you entered in the Credentials field.
FTP Credentials Variable	<p>Indication of whether the <b>FTP Credentials</b> field is a reference field for selecting a specific <b>Credential</b> (unchecked) or a text field for specifying the <b>FTP Credentials</b> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <b>Variables and Functions</b>.</p> <div data-bbox="360 401 1445 606" style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <b>updating multiple Tasks</b>, to change from using an FTP Credentials reference to using an FTP Credentials variable, you must change the <b>FTP Credentials Variable</b> field to <b>Yes</b> and specify the FTP Credentials variable in the <b>FTP Credentials Unresolved</b> field. Conversely, to change from using an FTP Credentials variable to using an FTP Credentials reference, you must change the <b>FTP Credentials Variable</b> field to <b>No</b> and specify the FTP Credentials reference in the <b>FTP Credentials</b> field.</p> </div>
Remote Filename	Path and file name on the remote server.
Use Regular Expression	Enables the use of a <b>regular expression</b> in the <b>Remote Filename</b> field.
Job Card (z/OS only)	<p>For z/OS, the job card information for the JCL statement. Example:</p> <div data-bbox="360 863 1445 974" style="background-color: #e0e0e0; padding: 10px; border: 1px solid #ccc;"> <pre>//File TransferJOB01 JOB (File Transfer,001),FANNY,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&amp;SYSUID,CLASS=A</pre> </div>
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None --             <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p>Workflow Only</p>	<p>Specification for whether or not to apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• -- System Default -- Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications as defined by the <b>System Default Wait/Delay Workflow Only</b> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</li> <li>• No Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications whether or not the task is in a Workflow.</li> </ul>

<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.

Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for task instances of the task.</p>
First Time Ran	<p>System-supplied; date and time this task first ran.</p>
Last Time Ran	<p>System-supplied; date and time the task last ran.</p>
Last Instance Duration	<p>System-supplied; amount of time the task took to run the last time it ran.</p>
Lowest Instance Time	<p>System-supplied; shortest amount of time this task has taken to run.</p>

Average Instance Time	System-supplied; average amount of time this task takes to run.
Highest Instance Time	System-supplied; longest amount of time this task has taken to run.
Number of Instances	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" data-bbox="321 478 1484 842"> <tr> <td data-bbox="321 478 461 548"><b>Abort Action</b></td> <td data-bbox="461 478 1484 548">Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td data-bbox="321 548 461 617"><b>Email Notification</b></td> <td data-bbox="461 548 1484 617">Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td data-bbox="321 617 461 686"><b>Set Variable</b></td> <td data-bbox="461 617 1484 686">Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td data-bbox="321 686 461 756"><b>SNMP Notification</b></td> <td data-bbox="461 686 1484 756">Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td data-bbox="321 756 461 825"><b>System Operation</b></td> <td data-bbox="461 756 1484 825">Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
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<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of this Workflow.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## Viewing an FTP File Monitor Task Instance

When an FTP File Monitor task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [FTP File Monitor Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

### FTP File Monitor Task Instance Details

The following FTP File Monitor Task Instance Details contains information on the execution of the task shown in the [FTP File Monitor Task Details](#).



### FTP File Monitor Task Instance Details Field Descriptions


The following table describes the fields, buttons, and tabs that display in FTP File Monitor Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.




Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	<p>System-supplied; how the task instance was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Trigger: (Trigger Name)</b> Instance was launched by the named trigger.</li> <li>• <b>Workflow: (Workflow Name)</b> Instance was launched by the named workflow.</li> <li>• <b>Manually Launched</b> Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	<p>Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.</p> <p>Options: 1 (high) - 20 (low).</p> <p>Default is 10.</p>
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.

Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
<b>File Monitor Details</b>	This section contains assorted detailed information about the task instance.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .
Agent Variable	<p>Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.
Agent Cluster Variable	<p>Indication of whether the <a href="#">Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
Cluster Broadcast	Group of Agents, all of which will run this task (compare with Agent Cluster). You can specify a Cluster Broadcast in place of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.

<p>Credentials</p>	<p><b>Credentials</b> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.</p>
<p>Credentials Variable</p>	<p>Indication of whether the <b>Credentials</b> field is a reference field for selecting a specific <b>Credential</b> (unchecked) or a text field for specifying the <b>Credential</b> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
<p>Monitor Type</p>	<p>Type of file event being monitored for.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Exists - Checks to see if the file exists.</li> <li>• Missing - Checks to see if the file does not exist.</li> </ul>
<p>Wait until Satisfied</p>	<p>If enabled, the task instance starts and continues to run until one of the following events occurs:</p> <ul style="list-style-type: none"> <li>• If <b>Monitor Type</b> = Exists and the specified file exists or appears, the task instance completes with a status of SUCCESS.</li> <li>• If <b>Monitor Type</b> = Missing and the specified file does not exist or exists then disappears, the task instance completes with a status of SUCCESS.</li> </ul> <p>If not enabled, the task instance:</p> <ol style="list-style-type: none"> <li>1. Starts.</li> <li>2. Checks for the existence of the file.</li> <li>3. Takes one of the following actions:                         <ul style="list-style-type: none"> <li>• If <b>Monitor Type</b> = Exists and if the file exists, the task instance completes with a status of SUCCESS.</li> <li>• If <b>Monitor Type</b> = Exists and if the file does not exist, the task instance completes with a status of FAILURE.</li> <li>• If <b>Monitor Type</b> = Missing and if the file exists, the task instance completes with a status of FAILURE.</li> <li>• If <b>Monitor Type</b> = Missing and if the file does not exist, the task instance completes with a status of SUCCESS.</li> </ul> </li> </ol>
<p>Poll Interval (Seconds)</p>	<p>If <b>Wait until Satisfied</b> is enabled: Frequency, in seconds, in which the FTP File Monitor will check to see if the file exists or is missing.</p>
<p>Maximum Polls</p>	<p>If <b>Wait until Satisfied</b> is enabled: Maximum number of times that the FTP File Monitor will check to see if the file exists or is missing.</p>

<p>Stable (Seconds)</p>	<p>If <a href="#">Wait until Satisfied</a> is enabled: Period of time, in seconds, during which the file has not changed.</p> <p>For an FTP/SFTP File Monitor task, a file's stability depends on its size. If the file size displayed in the FTP/SFTP output does not change during the specified number of seconds, the file is considered stable. In order for the task to reliably monitor the file's stability, the task must display a file's size in a well-known location. This means that the file list returned in the output must be in Unix long-listing format, as follows:</p> <div data-bbox="360 329 1445 417" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <pre style="font-family: monospace;">-rwxr-xr-x 1 owner group 12345 Jan 1 2012 somefile.txt</pre> </div> <p>The task will only find the size if it is in the 5th column (for example, 12345 in the example above).</p> <p>The default file list format varies across different FTP client/server implementations, but most support additional commands that can force the output to the required format. The <a href="#">List Format Options</a> field is provided to insert those statements into the FTP script that the file monitor task executes.</p> <p>By default, if a value for <a href="#">Stable (Seconds)</a> is specified, an FTP File Monitor task instance will verify that the Agent version is 5.1.0.16 or higher. If the Agent version is 5.1.0.15 or lower, the task instance will not run, the status will be set to <b>Start Failure</b>, and the following message will be logged: Stable (Seconds) option only supported on agent 5.1.0.16 or higher.</p>
<p>Server Type</p>	<p>Type of FTP server.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• FTP</li> <li>• SFTP</li> </ul>

<p>List Format Options</p>	<p>If <a href="#">Server Type</a> is FTP: Allows you to add statements to the FTP script that control the format of the file list returned by the FTP task. The Agent depends on the file list being in Unix "long" format (that is, what you would see if you entered "ls -l" from the command shell) in order to correctly and reliably parse out file name and size (when a <a href="#">Stable</a> period is specified). If the FTP Server is configured to return a different format, the Server may support commands that alter the format.</p> <p>For example, the following statements may be used for an FTP File Monitor task executing against an IBM iSeries (AS/400) FTP Server to ensure a correctly-formatted file list:</p> <pre style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;">site listfmt 1 site namefmt 1</pre> <p>If the FTP File Monitor task is executing against a Microsoft FTP Server and that Server is configured to return a file list in DOS format, the following statement will toggle the format to a Unix-style listing.</p> <pre style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;">site dirstyle</pre> <p>Not all FTP client/server implementations provide statements that can alter the format of the <b>ls</b> command, which the FTP File Monitor task issues to generate the file listing. However, those implementations may support the <b>dir</b> command, which can return the file list in the correct format. If the <b>dir</b> command is specified in the List Format Options field, the FTP File Monitor task will use the results from that command to obtain the file sizes. In such cases, the FTP script will contain the <b>dir</b> and <b>ls</b> commands, but since statements in the List Format Options field are inserted into the script prior the <b>ls</b> command, the results from the <b>dir</b> command are parsed first.</p> <p>If the <b>dir</b> command is necessary to obtain the correct file list format, simply specify that command along with the same value specified in the <a href="#">Remote Filename</a> field. For example, if <a href="#">Remote Filename</a> is <code>/uagtests/data/somefile*.txt</code>, enter the following in this field:</p> <pre style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;">dir /uagtests/data/somefile*.txt</pre> <p>This statement also can be used with other commands to get the correct output. For example, if a Windows FTP Server is configured to return file lists in Windows format, use <b>site</b> and <b>dir</b> commands together in this field:</p> <pre style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;">site dirstyle dir /uagtests/data/somefile*.txt</pre> <p>Invalid statements or valid statements that do not control the file list format are ignored.</p>
<p>Transfer Mode</p>	<p>Transfer mode.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Active</li> <li>• Passive</li> <li>• Extended Passive</li> </ul>
<p>Remote Server</p>	<p>Name or IP address of the File Transfer server. This machine may or may not be the same as the Universal Agent machine.</p> <p>You also can specify a non-standard FTP or SFTP port:</p> <ul style="list-style-type: none"> <li>• For FTP, specify the port number separated from the host name with a space: "some.server.com 2222".</li> <li>• For SFTP, specify the port number separated from the host name with a colon: "some.server.com:2222".</li> </ul>

FTP Credentials	Login credentials that the Agent will use to access the FTP or SFTP server machine. If the FTP File Monitor server and Agent are running on the same machine, enter the same credentials as those you entered in the Credentials field.
FTP Credentials Variable	<p>Indication of whether the <a href="#">FTP Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">FTP Credentials</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div data-bbox="358 401 1446 606" style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an FTP Credentials reference to using an FTP Credentials variable, you must change the <b>FTP Credentials Variable</b> field to <b>Yes</b> and specify the FTP Credentials variable in the <b>FTP Credentials Unresolved</b> field. Conversely, to change from using an FTP Credentials variable to using an FTP Credentials reference, you must change the <b>FTP Credentials Variable</b> field to <b>No</b> and specify the FTP Credentials reference in the <b>FTP Credentials</b> field.</p> </div>
Remote Filename	Path and file name on the remote server.
Use Regular Expression	Enables the use of a <a href="#">regular expression</a> in the <a href="#">Remote Filename</a> field.
Job Card (z/OS only)	<p>For z/OS, the job card information for the JCL statement. Example:</p> <div data-bbox="358 863 1446 974" style="background-color: #e0e0e0; padding: 10px; border: 1px solid #ccc;"> <pre>//File TransferJOB01 JOB (File Transfer,001),FANNY,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&amp;SYSUID,CLASS=A</pre> </div>
z/OS ID (z/OS only)	z/OS execID, used internally by the z/OS Agent to identify each z/OS task.
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <a href="#">Wait To Start</a> = Time or Relative Time; Number of hours and minutes to wait before starting the task.

<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>
<p>Delay Duration In Seconds</p>	<p>If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.</p>
<p>Workflow Only</p>	<p>Specification for whether or not to apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• -- System Default -- Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications as defined by the <b>System Default Wait/Delay Workflow Only</b> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</li> <li>• No Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications whether or not the task is in a Workflow.</li> </ul>

<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	<p>Specifies the amount of time to wait before starting a task after it has been launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <b>Wait To Start</b> = Time; Number of hours and minutes to wait before starting the task.
Wait Duration	If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <b>Late Start Type</b> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.



Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
Finished Late	<p>System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.</p>
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
Late Finish Duration	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Finished Early	<p>System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.</p>
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>

CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Average Estimated End Time	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Longest Estimated End Time	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .

<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Output</b>	Displays output generated from the process, if any, based on specifications provided by the user in the Monitor Type fields in the task Details. Output also can be obtained by clicking the <a href="#">Retrieve Output</a> button.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Running an FTP File Monitor Task

You can run an FTP File Monitor task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the FTP File Monitor Tasks list or FTP File Monitor Task Details [Action menu](#).
- As part of a [Workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## Built-In Variables

The built-in variables outlined below can be used in an FTP File Monitor task to pass data where appropriate:

- [Task and Task Instance Variables](#)
- [FTP File Monitor Variables](#).

## System Monitor Task

- Overview
- Built-In Variables
- Creating a System Monitor Task
  - System Monitor Task Details
  - System Monitor Task Details Field Descriptions
- Viewing a System Monitor Task Instance
  - System Monitor Task Instance Details
  - System Monitor Task Instance Details Field Descriptions
- Running a System Monitor Task
- Monitoring Task Execution

### Overview

The System Monitor task allows you to monitor a specific remote machine and check for free disk space. You might use this task to check for sufficient disk space before running a task on it that requires a specific amount. In order for this task to execute, the remote machine must have Universal Agent running on it.

### Built-In Variables

The following [built-in variables](#) can be used in a System Monitor task to pass data where appropriate:

- [Task Instance variables](#)
- [Agent-Based Task Instance variables](#)
- [System Monitor Task variables](#)

### Creating a System Monitor Task

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > System Monitor Tasks**. The System Monitor Tasks list displays a list of all currently defined System Monitor tasks.

Below the list, System Monitor Task Details for a new System Monitor task displays.

The screenshot shows the 'System Monitors' interface. At the top, there is a list of 5 system monitors. Below the list, the 'System Monitor Details' section is visible, showing various configuration fields for a new task.

Task Name	Task Description	Monitor Type	Updated By	Updated
stonebranch-systemmonitor-01		Diskspace Free	ops.admin	2014-06-13 14:22:34 -0400
stonebranch-systemmonitor-02		Diskspace Free	ops.admin	2014-06-13 14:22:43 -0400
stonebranch-systemmonitor-03		Diskspace Free	ops.admin	2014-06-13 14:22:49 -0400
stonebranch-systemmonitor-04		Diskspace Free	ops.admin	2014-06-13 14:22:53 -0400
stonebranch-systemmonitor-05		Diskspace Free	ops.admin	2014-06-13 14:22:57 -0400

The 'System Monitor Details' section includes the following fields:

- Task Name**: [Text Input]
- Version**: [Number Input: 1]
- Task Description**: [Text Input]
- Member of Business Services**: [Dropdown Menu]
- Hold on Start**: [Checkbox]
- Virtual Resource Priority**: [Number Input: 10]
- Hold Resources on Failure**: [Checkbox]
- Agent**: [Dropdown Menu]
- Agent Cluster**: [Dropdown Menu]
- Agent Variable**: [Checkbox]
- Agent Cluster Variable**: [Checkbox]
- Credentials**: [Dropdown Menu]
- Cluster Broadcast**: [Dropdown Menu]
- Credentials Variable**: [Checkbox]
- Monitor Type**: [Dropdown Menu]

**Step 2** Enter/select Details for a new System Monitor task, using the [field descriptions](#) below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.



**Note**

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## System Monitor Task Details


The following System Monitor Task Details is for an existing System Monitor task.



Depending on the values that you enter / select for these fields, and whether or not the System Monitor task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the System Monitor Task Details.

## System Monitor Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the System Monitor Task Details.

Field Name	Description
<b>General</b>	This section contains general information about the task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions</a> tab to view previous versions. For details, see <a href="#">Record Versioning</a> .

Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>System Monitor Details</b>	This section contains assorted detailed information about the task.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .
Agent Variable	Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.


Agent Cluster Variable	<p>Indication of whether the <a href="#">Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Agent Cluster</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
Cluster Broadcast	<p>Group of Agents, all of which will run this task (compare with Agent Cluster). You can specify a Cluster Broadcast in place of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.</p>
Credentials	<p><a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.</p>
Credentials Variable	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: <code>\${variable name}</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
Monitor Type	<p>Type of system status to monitor for.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Diskspace Free</li> </ul>
Condition	<p>Specifies whether you want to check for free disk space greater than or less than the amount specified in the <a href="#">Resource Available</a> field.</p>
Resource Available	<p>Used in conjunction with the <a href="#">By Scale</a> field. Enter a number indicating the amount of the resource you are checking for. For example, to check to see if the machine has at least 1GB of free disk space, select Greater Than in the <a href="#">Condition</a> field, enter 1 in the Resource Available field, and select GB in the <a href="#">By Scale</a> field.</p>
By Scale	<p>Scale of the number you entered in the <a href="#">Resource Available</a> field. Options: KB (kilobyte), MB (megabyte), GB (gigabyte).</p>
Mount Points or Drives	<p>Use this field to limit the check to a specific mount point or drive, such as drive C: for Windows.</p>
Wait / Delay Options	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>



<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Delay Duration</p>	<p>If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.</p>

Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
Workflow Only	<p>Specification for whether or not to apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• -- System Default -- Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications as defined by the <a href="#">System Default Wait/Delay Workflow Only</a> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</li> <li>• No Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications whether or not the task is in a Workflow.</li> </ul>
<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for task instances of the task.
First Time Ran	System-supplied; date and time this task first ran.

<b>Last Time Ran</b>	System-supplied; date and time the task last ran.
<b>Last Instance Duration</b>	System-supplied; amount of time the task took to run the last time it ran.
<b>Lowest Instance Time</b>	System-supplied; shortest amount of time this task has taken to run.
<b>Average Instance Time</b>	System-supplied; average amount of time this task takes to run.
<b>Highest Instance Time</b>	System-supplied; longest amount of time this task has taken to run.
<b>Number of Instances</b>	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	<p>Deletes the current record.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>Specified in an enabled Trigger.</li> <li>The only task specified in a disabled Trigger.</li> </ul> </div>
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<p><b>Actions</b></p>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1" data-bbox="266 478 1484 840"> <tr> <td data-bbox="266 478 410 548"><b>Abort Action</b></td> <td data-bbox="410 478 1484 548">Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td data-bbox="266 548 410 617"><b>Email Notification</b></td> <td data-bbox="410 548 1484 617">Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td data-bbox="266 617 410 686"><b>Set Variable</b></td> <td data-bbox="410 617 1484 686">Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td data-bbox="266 686 410 756"><b>SNMP Notification</b></td> <td data-bbox="410 686 1484 756">Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td data-bbox="266 756 410 825"><b>System Operation</b></td> <td data-bbox="410 756 1484 825">Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
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<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<p><b>Virtual Resources</b></p>	<p>Lists all <a href="#">Virtual Resources</a> to which this task is assigned.</p>										
<p><b>Mutually Exclusive</b></p>	<p>Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.</p>										
<p><b>Instances</b></p>	<p>Lists all instances of this Workflow.</p>										
<p><b>Triggers</b></p>	<p>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: &lt;current task name&gt;#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a>.</p>										
<p><b>Notes</b></p>	<p>Lists all <a href="#">notes</a> associated with this record.</p>										
<p><b>Versions</b></p>	<p>Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a>.</p>										

## Viewing a System Monitor Task Instance

When a System Monitor task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [System Monitor Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

## System Monitor Task Instance Details

The following System Monitor Task Instance Details contains information on the execution of the task shown in the [System Monitor Task Details](#).

The screenshot displays the 'System Monitor Task Instance Details' window for 'stonebranch-systemmonitor-01'. The interface includes several sections:


- General:** Instance Name (stonebranch-systemmonitor-01), Reference Id (6), Task (stonebranch-systemmonitor-01), Invoked By (Manually Launched), Member of Business Services (stonebranchbusinessservice 01), Execution User (stonebranch-user-01), Virtual Resource Priority (10), and Hold Resources on Failure (checkbox).
- Status:** Status (Success), Exit Code (0), Status Description, Operational Memo, Wait Until Time (2015-05-08 10:09:49 -0400), Queued Time (2015-02-06 14:45:37 -0500), Trigger Time, Start Time (2015-02-06 14:45:41 -0500), Launch Time (2015-02-06 14:45:37 -0500), End Time (2014-06-20 13:09:49 -0400), Actual Available (3.6), and By Scale (GB).
- System Monitor Details:** agentId, Agent Cluster, Agent Variable, Agent Cluster Variable, Credentials (stonebranch-credential-01), Credentials Variable, Monitor Type (DiskSpace Free), Condition (Greater Than), Resource Available (1), By Scale (MB), and Mount Points or Drives (C:).
- Wait/Delay Options:** Wait To Start (Seconds), Wait Duration In Seconds (30), Delay On Start (Seconds), and Delay Duration In Seconds (30).
- Critical Path Options:** CP Duration and CP Duration Unit (Minutes).
- Statistics:** User Estimated End Time, Average Estimated End Time (2014-06-09 15:11:42 -0400), Shortest Estimated End Time (2014-06-09 15:11:42 -0400), and Longest Estimated End Time (2014-06-09 15:11:42 -0400).

### System Monitor Task Instance Details Field Descriptions



The following table describes the fields, buttons, and tabs that display in System Monitor Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.

Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	<p>System-supplied; how the task instance was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	<p>Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.</p> <p>Options: 1 (high) - 20 (low).</p> <p>Default is 10.</p>
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.

Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Actual Available	Amount of free disk space on the specified system.
By Scale	Scale of the number show in the <a href="#">Actual Available</a> field.  Options: <ul style="list-style-type: none"> <li>• KB (kilobyte)</li> <li>• MB (megabyte)</li> <li>• GB (gigabyte)</li> </ul>
<b>System Monitor Details</b>	This section contains assorted detailed information about the task instance.
Agent	Name of the <a href="#">Agent</a> resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an <a href="#">Agent Cluster</a> .
Agent Variable	Indication of whether the <a href="#">Agent</a> field is a reference field for selecting a specific <a href="#">Agent</a> (unchecked) or a text field for specifying the <a href="#">Agent</a> as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in <a href="#">Variables and Functions</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using an Agent reference to using an Agent variable, you must change the <b>Agent Variable</b> field to <b>Yes</b> and specify the Agent variable in the <b>Agent Unresolved</b> field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the <b>Agent Variable</b> field to <b>No</b> and specify the Agent reference in the <b>Agent</b> field.</p> </div>
Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See <a href="#">Agent Clusters</a> for more information.



<p>Agent Cluster Variable</p>	<p>Indication of whether the <a href="#">Agent Cluster</a> field is a reference field for selecting a specific <a href="#">Agent Cluster</a> (unchecked) or a text field for specifying the <a href="#">Agent Cluster</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the <b>Agent Cluster Variable</b> field to <b>Yes</b> and specify the Agent Cluster variable in the <b>Agent Cluster Unresolved</b> field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the <b>Agent Cluster Variable</b> field to <b>No</b> and specify the Agent Cluster reference in the <b>Agent Cluster</b> field.</p> </div>
<p>Cluster Broadcast</p>	<p>Group of Agents, all of which will run this task (compare with Agent Cluster). You can specify a Cluster Broadcast in place of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.</p>
<p>Credentials</p>	<p><a href="#">Credentials</a> under which an Agent runs this task. These credentials override any credentials provided in the Agent resource definition for any Agent running this task.</p>
<p>Credentials Variable</p>	<p>Indication of whether the <a href="#">Credentials</a> field is a reference field for selecting a specific <a href="#">Credential</a> (unchecked) or a text field for specifying the <a href="#">Credential</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b> When <a href="#">updating multiple Tasks</a>, to change from using a Credentials reference to using a Credentials variable, you must change the <b>Credentials Variable</b> field to <b>Yes</b> and specify the Credentials variable in the <b>Credentials Unresolved</b> field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the <b>Credentials Variable</b> field to <b>No</b> and specify the Credentials reference in the <b>Credentials</b> field.</p> </div>
<p>Monitor Type</p>	<p>Type of file event being monitored for.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Create - Wait for the creation of one or more files.</li> <li>• Delete - Wait for the deletion of one or more files.</li> <li>• Change - Monitor for a change in one or more files. [<b>NOTE:</b> not supported for z/OS.]</li> <li>• Exists - Check to see if one or more files already exist.</li> <li>• Missing - Check to see if one or more files are missing.</li> </ul>
<p>Condition</p>	<p>Specifies whether you want to check for free disk space greater than or less than the amount specified in the <a href="#">Resource Available</a> field.</p>
<p>Resource Available</p>	<p>Used in conjunction with the <a href="#">By Scale</a> field. Enter a number indicating the amount of the resource you are checking for. For example, to check to see if the machine has at least 1GB of free disk space, select Greater Than in the <a href="#">Condition</a> field, enter 1 in the Resource Available field, and select GB in the <a href="#">By Scale</a> field.</p>
<p>By Scale</p>	<p>Scale of the number you entered in the <a href="#">Resource Available</a> field. Options: KB (kilobyte), MB (megabyte), GB (gigabyte).</p>
<p>Mount Points or Drives</p>	<p>Use this field to limit the check to a specific mount point or drive, such as drive C: for Windows.</p>

<p><b>Wait / Delay Options</b></p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
<p>Wait Time</p>	<p>If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
<p>Wait Duration</p>	<p>If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.</p>
<p>Wait Duration In Seconds</p>	<p>If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.</p>
<p>Delay On Start</p>	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>

Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	Required if <a href="#">Late Start</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.  For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.  For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.

Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for the the task instance.
User Estimated End Time	System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Shortest Estimated End Time	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.

<b>Average Estimated End Time</b>	System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Longest Estimated End Time</b>	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Projected End Time</b>	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Output</b>	Displays output generated from the process, if any, based on specifications provided by the user in the Monitor Type fields in the task Details. Output also can be obtained by clicking the <a href="#">Retrieve Output</a> button.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Running a System Monitor Task

You can run a System Monitor task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the System Monitor Tasks list or System Monitor Task

- Details [Action menu](#).
- As part of a [workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## Variable Monitor Task

- [Overview](#)
- [Variable Values to Monitor](#)
  - [Monitoring for the Current Value of a Variable](#)
  - [Monitoring for a Change in the Value of a Variable](#)
  - [Monitoring for Current Value of a Variable and a Change in the Value of a Variable](#)
- [Built-In Variables](#)
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  - [Variable Monitor Task Details](#)
  - [Variable Monitor Task Details Field Descriptions](#)
- [Viewing a Variable Monitor Task Instance](#)
  - [Variable Monitor Task Instance Details](#)
  - [Variable Monitor Task Instance Details Field Descriptions](#)
- [Running a Variable Monitor Task](#)
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### Overview

The Variable Monitor task allows you to monitor the value of a [Global Variable](#).

### Variable Values to Monitor

The Variable Monitor task lets you monitor for:

- [Current](#) value of a [Global Variable](#).
- [Change](#) in the value of a [Global Variable](#).
- [Both](#) current value and change in the value of a [Global Variable](#).

### Monitoring for the Current Value of a Variable

- If the [Variable To Monitor](#) exists and its current value matches the Variable Monitor conditions, the Variable Monitor task instance will transition to a **Success** status; otherwise, it will transition to a **Failed** status.
- If the [Variable To Monitor](#) does not exist (or the [Execution User](#) does not have [Read permission](#) for the [Global Variable](#)) and the [Value Condition](#) field is **undefined**, the Variable Monitor task instance will transition to a **Success** status; otherwise, it will transition to a **Failed** status.

### Monitoring for a Change in the Value of a Variable

- The Variable Monitor task instance will not check the current value of the [Variable To Monitor](#), but it will monitor for changes to the [Variable To Monitor](#) value. If a change to the [Variable To Monitor](#) value matches the Variable Monitor conditions, the Variable Monitor task instance will transition to a **Success** status; otherwise, it will continue to monitor for changes to the [Variable To Monitor](#) value.
- The Variable Monitor task instance will monitor indefinitely for the Variable Monitor conditions to be met unless you specify a value in the [Time Limit](#) field. The Variable Monitor task instance will transition to a **Failed** status if the Variable Monitor conditions are not met within the specified [Time Limit](#).



#### Note

- A Variable Monitor task instance will not detect changes to a [Global Variable Value](#) if the [Execution User](#) does not have [Read permission](#) for the [Global Variable](#).
- Setting the [Global Variable Value](#) to the same value from the Universal Controller user interface, [CLI](#), or [web service](#) is not considered a change.
- Only changes to the [Global Variable Name](#) (case-insensitive) and [Global Variable Value](#) will be considered a change in value to the [Global Variable](#). That is, changes to the [Description](#) and/or [Member of Business Services](#) fields alone will not be considered a change in value to the [Global Variable](#).

### Monitoring for Current Value of a Variable and a Change in the Value of a Variable

- If the [Variable To Monitor](#) exists and its current value matches the Variable Monitor conditions, the Variable Monitor task instance will transition to a **Success** status; otherwise, it will continue to monitor as though [Variable To Monitor](#) is **Change**.
- If the [Variable To Monitor](#) does not exist (or the [Execution User](#) does not have [Read permission](#) for the [Global Variable](#)) and the [Value](#)

Condition is **undefined**, the Variable Monitor task instance will transition to a **Success** status; otherwise, it will continue to monitor as though Value Monitor Type is **Change**.

## Built-In Variables

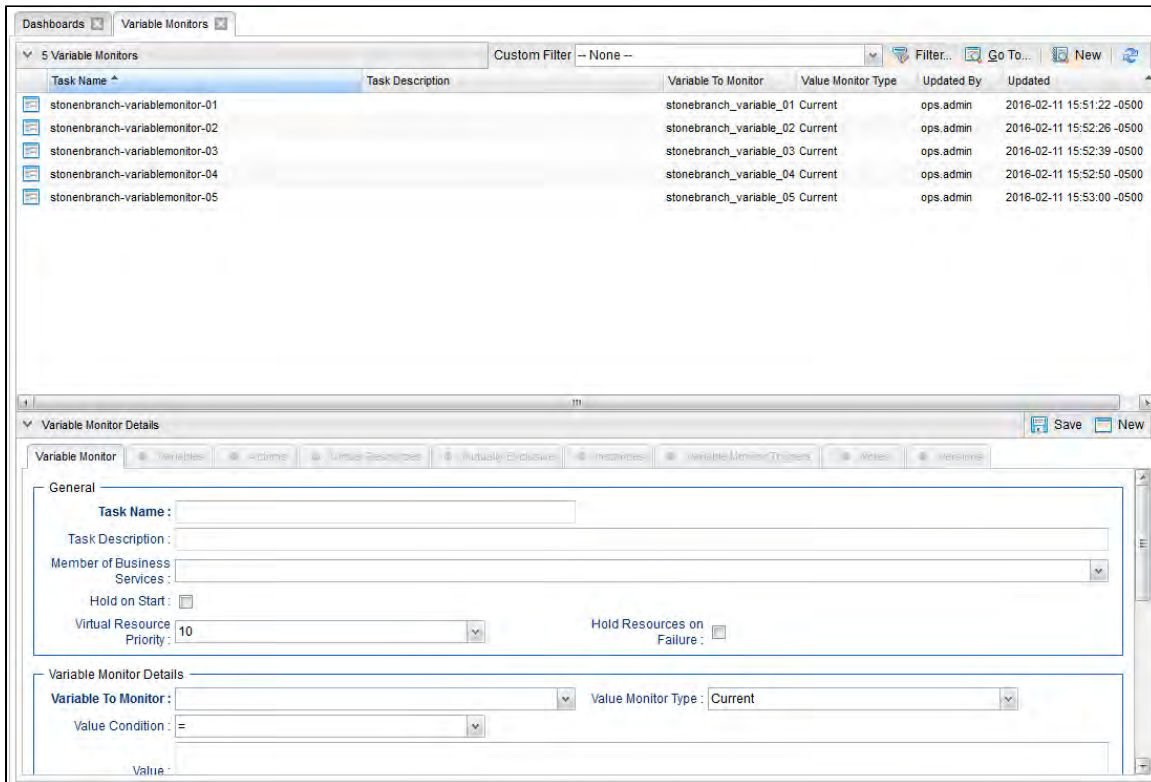
When the Variable Monitor conditions are met, the following built-in variables will be set for the Variable Monitor task instance:

- Variable Monitor Task Instance/Trigger Variables
- Task Instance Variables

## Creating a Variable Monitor Task

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > Variable Monitor Tasks**. The Variable Monitor Tasks list displays a list of all currently defined Variable Monitor tasks.

Below the list, Variable Monitor Task Details for a new Variable Monitor task displays.



**Step 2** Enter/select Details for a new Variable Monitor task, using the [field descriptions](#) below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.





**Note**

To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the **Details** icon next to a record name in the list, or right-click a record in the list and then click **Open** in the **Action** menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the **Action** menu that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

### Variable Monitor Task Details

The following Variable Monitor Task Details is for an existing Variable Monitor task.

Depending on the values that you enter / select for these fields, and whether or not the Variable Monitor task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Variable Monitor Task Details.

The screenshot shows a web-based form titled "Variable Monitor Details: stonenbranch-variablemonitor-01". The form is organized into several sections:

- General:** Contains fields for Task Name (stonenbranch-variablemonitor-01), Version (3), Task Description, Member of Business Services (dropdown), Hold on Start (checkbox), Virtual Resource Priority (10), and Hold Resources on Failure (checkbox).
- Variable Monitor Details:** Contains Variable To Monitor (stonebranch\_variable\_01), Value Monitor Type (Change), Value Condition (=), Value (text input), and Time Limit (text input) with Time Limit Unit (Hours).
- Wait/Delay Options:** Contains Wait To Start, Delay On Start, and Workflow Only (all dropdown menus).
- Time Options:** Contains Late Start, Late Finish, and Early Finish (all checkboxes), and User Estimated Duration (Day, Hour, Min, Sec dropdowns).
- Critical Path Options:** Contains CP Duration (text input) and CP Duration Unit (Minutes dropdown).

At the top and bottom of the form are navigation buttons: Update, Launch Task, View Parents, Copy, Delete, Refresh, and Close.

### Variable Monitor Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Variable Monitor Task Details.


Field Name	Description
General	This section contains general information about the task.

Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions tab</a> to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Variable Monitor Details</b>	This section contains assorted detailed information about the task.
Variable to Monitor	Name of the variable to monitor. <a href="#">Variables</a> are supported.
Value Monitor Type	Type of monitoring to be done on the Variable value.  Options: <ul style="list-style-type: none"> <li>• Current (monitor the current value)</li> <li>• Change (monitor for a change in value)</li> <li>• Current/Change (monitor for both the current value and a change in value)</li> </ul>
Value Condition	Condition for the value of the variable being monitored.  Options: <ul style="list-style-type: none"> <li>• – None –</li> <li>• =</li> <li>• !=</li> <li>• &gt;</li> <li>• &gt;=</li> <li>• &lt;</li> <li>• &lt;=</li> <li>• regex</li> <li>• undefined</li> </ul>

Value	If <b>Value Condition</b> = =, !=, >, >=, <, <=, or regex; Value of the variable being monitored.
Time Limit	If <b>Value Monitor Type</b> = Change or Current/Change; Used for Variable Monitor tasks not associated with a trigger; Amount of time (in units specified by <b>Time Limit Unit</b> ) to monitor for the Variable Monitor conditions to be met. The Time Limit duration is always relative to the start time of the Variable Monitor task instance.
Time Limit Unit	If <b>Value Monitor Type</b> = Change or Current/Change; Unit of time to use for <b>Time Limit</b> . Options: <ul style="list-style-type: none"> <li>• Minutes</li> <li>• Hours</li> <li>• Days</li> </ul>
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.
Wait Day Constraint	If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day. Valid values: <ul style="list-style-type: none"> <li>• -- None --                             <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
Wait Duration	If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.

Wait Duration In Seconds	If <a href="#">Wait To Start</a> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
Workflow Only	<p>Specification for whether or not to apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• - - System Default - - Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications as defined by the <a href="#">System Default Wait/Delay Workflow Only</a> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications only if the task is in a Workflow.</li> <li>• No Apply the <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> specifications whether or not the task is in a Workflow.</li> </ul>
<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>

Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if <a href="#">Late Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.
<b>Critical Path Options</b>	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a> . If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.  Options: <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> Default is Minutes.
<b>Statistics</b>	This section contains time-related statistics for task instances of the task.
First Time Ran	System-supplied; date and time this task first ran.
Last Time Ran	System-supplied; date and time the task last ran.
Last Instance Duration	System-supplied; amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; shortest amount of time this task has taken to run.
Average Instance Time	System-supplied; average amount of time this task takes to run.
Highest Instance Time	System-supplied; longest amount of time this task has taken to run.
Number of Instances	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Launch Task</b>	Manually launches the task.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Copy</b>	Creates a copy of this task, which you are prompted to rename.
<b>Delete</b>	Deletes the current record.  <div style="background-color: #ffffcc; padding: 10px;"> <p> <b>Note</b>                      You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> <li>• Specified in an enabled Trigger.</li> <li>• The only task specified in a disabled Trigger.</li> </ul> </div>

<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.										
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.										
<b>Tabs</b>	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.										
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.										
<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1"> <tr> <td><b>Abort Action</b></td> <td>Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td><b>Email Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td><b>Set Variable</b></td> <td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td><b>SNMP Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td><b>System Operation</b></td> <td>Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .										
<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .										
<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .										
<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .										
<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Instances</b>	Lists all instances of this Workflow.										
<b>Variable Monitor Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## Viewing a Variable Monitor Task Instance

When a Variable Monitor task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the [Variable Monitor Task Details](#) for that task

- Activity Monitor
- Task Instances list

### Variable Monitor Task Instance Details

The following Variable Monitor Task Instance Details contains information on the execution of the task shown in the Variable Monitor Task Details.

The screenshot shows a window titled "Variable Monitor Task Instance Details: stonenbranch-variablemonitor-01". It has a toolbar with buttons for Update, Cancel, Force Finish, Delete, Refresh, and Close. Below the toolbar are tabs for "Variable Monitor Task Instance", "Virtual Resources", "Exclusive Requests", and "Notes".

**General**

- Instance Name: stonenbranch-variablemonitor-01
- Reference Id: 1
- Task: stonenbranch-variablemonitor-01
- Invoked By: Manually Launched
- Task Description: (empty)
- Member of Business Services: (empty)
- Execution User: ops.admin
- Virtual Resource Priority: 10
- Hold Resources on Failure: (checkbox)

**Status**

- Status: Running
- Status Description: (empty)
- Operational Memo: (empty)
- Trigger Time: (empty)
- Launch Time: 2016-02-23 16:27:30 -0500
- Start Time: 2016-02-23 16:27:30 -0500
- End Time: (empty)
- Duration: (empty)

**Variable Monitor Details**

- Variable To Monitor: stonebranch\_variable\_01
- Value Monitor Type: Change
- Value Condition: regex
- Value: (empty)
- Time Limit: (empty)
- Time Limit Unit: Hours

**Statistics**

- User Estimated End Time: (empty)
- Average Estimated End Time: 2016-02-23 16:27:30 -0500
- Shortest Estimated End Time: (empty)
- Longest Estimated End Time: (empty)

At the bottom, there is another toolbar with buttons for Update, Cancel, Force Finish, Delete, Refresh, and Close.

### Variable Monitor Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Variable Monitor Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.



Invoked by	<p>System-supplied; how the task instance was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Trigger: (Trigger Name)</b> Instance was launched by the named trigger.</li> <li>• <b>Workflow: (Workflow Name)</b> Instance was launched by the named workflow.</li> <li>• <b>Manually Launched</b> Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	<p>Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.</p> <p>Options: 1 (high) - 20 (low).</p> <p>Default is 10.</p>
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.

Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
<b>Variable Monitor Details</b>	This section contains assorted detailed information about the task instance.
Variable to Monitor	Name of the variable to monitor. <a href="#">Variables</a> are supported.
Value Monitor Type	Variable value(s) to monitor for. Options: <ul style="list-style-type: none"> <li>• Current</li> <li>• Change</li> <li>• Current/Change</li> </ul>
Value Condition	Condition for the value of the variable being monitored. Options: <ul style="list-style-type: none"> <li>• – None – (only if <a href="#">Value Monitor Type</a> = Change)</li> <li>• =</li> <li>• !=</li> <li>• &gt;</li> <li>• &gt;=</li> <li>• &lt;</li> <li>• &lt;=</li> <li>• regex</li> <li>• undefined</li> </ul>
Value	If <a href="#">Value Condition</a> = =, !=, >, >=, <, <=, or regex; Value of the variable being monitored.
Time Limit	If <a href="#">Value Monitor Type</a> = Change or Current/Change; Used for Variable Monitor tasks not associated with a trigger; Amount of time (in units specified by <a href="#">Time Limit Unit</a> ) to monitor for the Variable Monitor conditions to be met. The Time Limit duration is always relative to the start time of the Variable Monitor task instance.
Time Limit Unit	If <a href="#">Value Monitor Type</a> = Change or Current/Change; Unit of time to use for <a href="#">Time Limit</a> . Options: <ul style="list-style-type: none"> <li>• Minutes</li> <li>• Hours</li> <li>• Days</li> </ul>
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>

Wait Time	If <b>Wait To Start</b> = Time or Relative Time; Number of hours and minutes to wait before starting the task.
Wait Day Constraint	<p>If <b>Wait Time</b> = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• -- None -- <ul style="list-style-type: none"> <li>• If <b>Wait To Start</b> = Time; Advance to the next day if calculated wait time is before the current time.</li> <li>• If <b>Wait To Start</b> = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.</li> </ul> </li> <li>• Same Day Do not advance day.</li> <li>• Next Day Advance to the next day.</li> <li>• Next Business Day Advance to the next business day.</li> <li>• Sunday If today is not Sunday, advance to next Sunday.</li> <li>• Monday If today is not Monday, advance to next Monday.</li> <li>• Tuesday If today is not Tuesday, advance to next Tuesday.</li> <li>• Wednesday If today is not Wednesday, advance to next Wednesday.</li> <li>• Thursday If today is not Thursday, advance to next Thursday.</li> <li>• Friday If today is not Friday, advance to next Friday.</li> <li>• Saturday If today is not Saturday, advance to next Saturday.</li> </ul> <p><b>Default is – None --.</b></p>
Wait Duration	If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains time-related specifications for the task instance.
Late Start	<p>If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a>). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <b>Started Late</b> field; the field is checked if the instance started after the specified time. The <b>Started Late</b> field displays in the task instance Details only if the user specified a Late Start in the task Details.</p>

Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.

Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>
CP Duration	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
CP Duration (Resolved)	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
CP Duration Unit	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Seconds</li> <li>• Minutes</li> <li>• Hours</li> </ul> <p>Default is Minutes.</p>
<b>Statistics</b>	<p>This section contains time-related statistics for the the task instance.</p>
User Estimated End Time	<p>System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.</p>
Shortest Estimated End Time	<p>System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.</p>
Average Estimated End Time	<p>System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.</p>
Longest Estimated End Time	<p>System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.</p>

<b>Projected End Time</b>	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Re-run</b>	See <a href="#">Re-running a Task</a> .
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Running a Variable Monitor Task

You can run a Variable Monitor task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the Variable Monitor Tasks list or Variable Monitor Task Details [Action menu](#).
- As part of a [workflow](#).
- [Specify triggers](#) that run the task automatically based on times or events.

## Monitoring Task Execution

You can monitor all system activity from the [Activity Monitor](#) and can view activity history from the [History list](#).

## Creating Task Actions

Universal Controller lets you create the following actions for tasks and workflows:

Action Type	Description
Abort	Allows you to abort a waiting or running task instance
Email Notification	Allows you to generate email notifications based on various events and statuses.
Set Variable	Allows you to set a variable to a specific value for a task or workflow.
SNMP Notification	Allows you to generate SNMP notifications to be sent to an SNMP Manager.
System Operation	Allows you to run a Universal Controller system operation based on specified conditions.

## Abort Actions

- [Overview](#)
- [Creating an Abort Action](#)
- [Abort Action Details Field Descriptions](#)

### Overview

The Abort Action allows you to abort a waiting or running task instance either by:

- Issuing a Skip command on a waiting task instance.
- Issuing a Force Finish command on a running task instance.

Additionally, for running task instances, the Abort Action provides the ability to Force Finish and Cancel by using the [Cancel Process if Active](#) option and/or override the exit code of the Force Finished task instance by using the [Override Exit Code](#) option.

You can trigger this action based on one or more of the following events associated with the task instance:

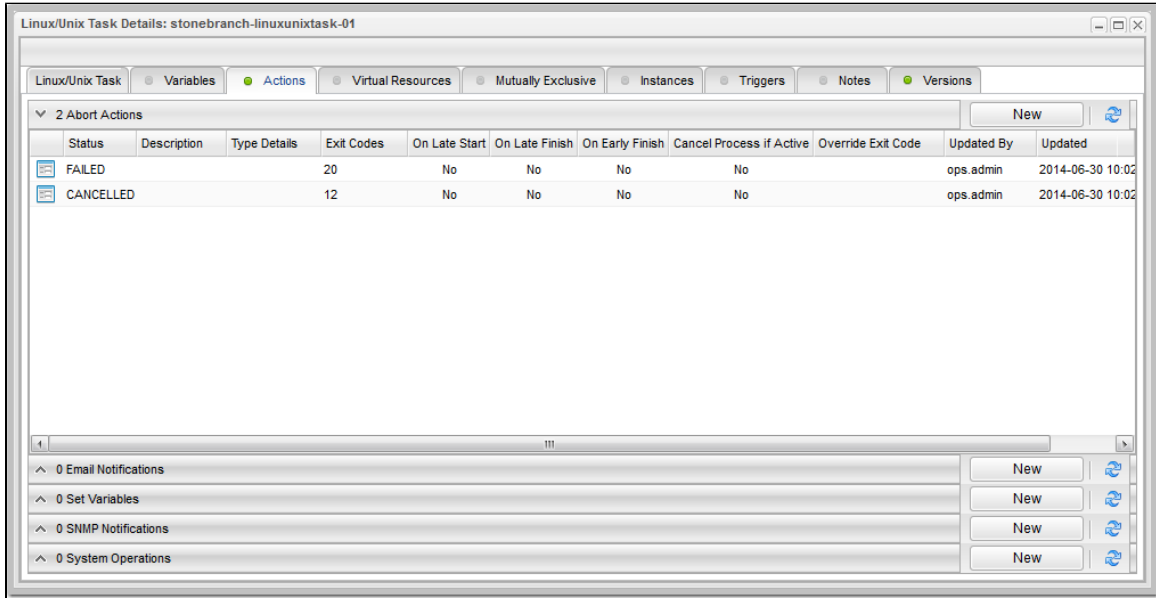
- Status or statuses of the task instance
- Exit code(s) generated by the program (along with at least one status)
- Late start
- Early or late finish

You can create one or more Abort Actions for any Universal Controller task. For Workflow tasks, you can also specify whether you want the Abort Action instructions to apply to the workflow itself, the workflow and/or its tasks, or to the tasks only.

### Creating an Abort Action

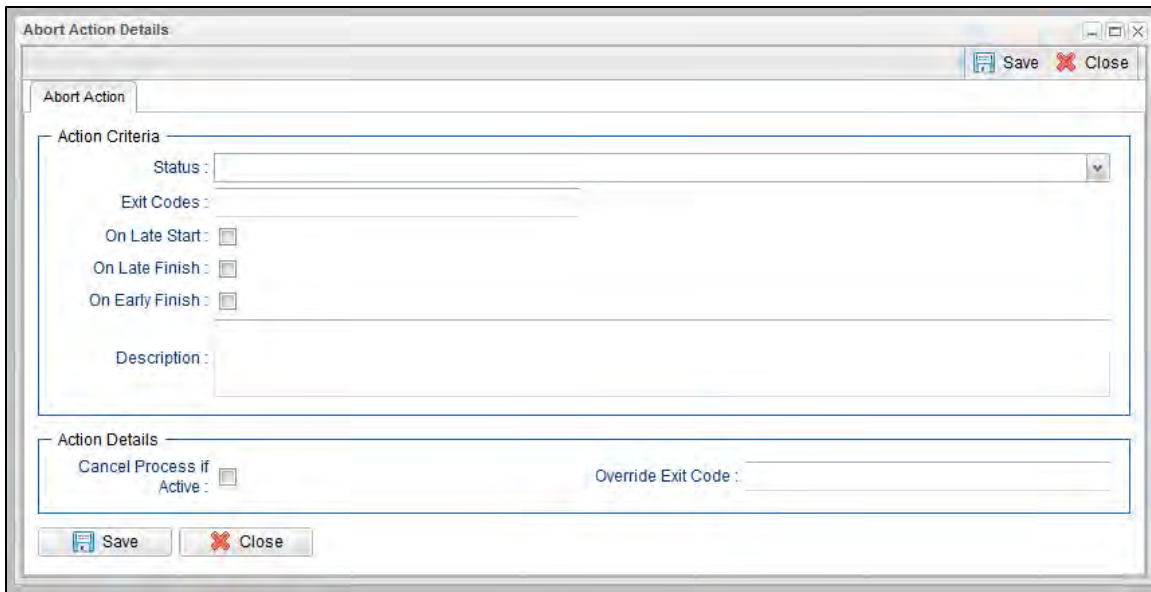
**Step 1** Display the Task Details of the task for which you are creating the Abort Action.

**Step 2** Click the **Actions** tab. A list of any defined Actions for that task displays.





**Step 3** Click the **New** button that displays on the Abort Actions row. The Abort Action Details pop-up displays.



**Step 4** Using the field descriptions, below, as a guide, complete the fields as needed.


**Step 5** Click the **Save** button, or right-click in the Details and then click **Save**, to save the record and return to the Actions List.

**Step 6** If appropriate, repeat these steps for any additional Abort Actions you want to create.

### Abort Action Details Field Descriptions

The following table describes the fields and buttons that display in the Abort Actions Details.

Field Name	Description
<b>Action Criteria</b>	This section contains criteria for performing the action.
Action Inheritance	For Workflow tasks only; the records that this action applies to.  Options: <ul style="list-style-type: none"> <li>• <b>SELF</b> The action applies only to the workflow; it is not inherited by its children tasks. For example, if the action is defined for the <b>Defined</b> status, when the workflow where the action is specified transitions into the <b>Defined</b> status, the action will run for the workflow. When children within this workflow transition into the <b>Defined</b> status, the action will not run.</li> <li>• <b>SELF/CHILDREN</b> The action applies to the workflow and any children under the workflow (it is as if each child under the workflow had the action specified on itself). For example, if the workflow or any of its children transition into the <b>Defined</b> status, the action will run.</li> <li>• <b>CHILDREN</b> This action applies only to the children under the workflow and not the workflow itself. For example, if any child of this workflow transitions into the <b>Defined</b> status, the action will run. However, when the workflow where this action is specified transitions into the <b>Defined</b> status, this action will not run.</li> </ul>
Status	The <b>status</b> of this task, by itself or together with an exit code, that will trigger the Abort action. You can specify as many statuses as needed.
Exit Codes	Specifies one or more exit codes that will trigger the event. If you specify an exit code, you must also specify at least one status. Use commas to separate multiple exit codes; use a hyphen to specify a range. Example: 1, 5, 22-30.
On Late Start	Generates the action or notification if the task started late, based on the Late Start Time specified in the task.

On Late Finish	Generates the action or notification if the task finishes late, based on the Late Finish time specified in the task.
On Early Finish	Generates the action or notification if the task finishes early, based on the Early Finish Time specified in the task.
Description	Description of this action.
<b>Action Details</b>	This section contains additional details about the action.
Cancel Process if Active	If enabled, instructs the Controller to cancel the process that was launched by this task before Force Finishing the task.
Override Exit Code	<p>Overrides the exit code returned by the process with the exit code specified in this field. This enables you to you Force Finish a task instance with a specific exit code so that you can force the workflow to take a conditional path using Conditions.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> If you run the Abort Action against a task that has not yet started, the task will be skipped, and the <b>Override Exit Code</b> is not applicable.</p> </div>
<b>Buttons</b>	This section identifies the buttons displayed above and below the Action Details that let you perform various actions.
<b>Save</b>	Saves a new Action record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	Closes the Details pop-up of this action.



## Email Notification Actions

- [Overview](#)
  - [Notifications Based on Events](#)
  - [Notifications Based on Status](#)
- [Creating an Email Notification](#)
- [Email Notification Details Field Descriptions](#)
  - [Report Variable Resolution](#)

### Overview

You can create one or more Email Notifications for any Universal Controller task. For workflow tasks, you can also specify whether you want the email to be triggered by the workflow itself, the workflow and/or its tasks, or by the tasks only.

In order to generate Email Notifications, there must be an [Email connection](#) defined, which provides the Email server name and other pertinent information.

### Notifications Based on Events

You can generate notifications based on one or more of the following events associated with the task instance of the task for which you create the notification:

- Status or statuses of the task instance
- Exit code(s) generated by the program (along with at least one status)
- Late start
- Early or late finish

### Notifications Based on Status

You also can generate notifications based on the status of:

- [Agents and Agent clusters](#)
- [Cluster nodes](#)
- [OMS Servers](#)

## Creating an Email Notification

<b>Step 1</b>	Display the Task Details of the task for which you are creating the Email Notification.
<b>Step 2</b>	Click the <b>Actions</b> tab. A list of any defined Actions for that task displays.

Linux/Unix Task Details: stonebranch-linuxunixtask-01

Linux/Unix Task | Variables | **Actions** | Virtual Resources | Mutually Exclusive | Instances | Triggers | Notes | Versions

2 Abort Actions [New] [Refresh]

Status	Description	Type Details	Exit Codes	On Late Start	On Late Finish	On Early Finish	Cancel Process if Active	Override Exit Code	Updated By	Updated
FAILED			20	No	No	No	No		ops.admin	2014-06-30 10:02
CANCELLED			12	No	No	No	No		ops.admin	2014-06-30 10:02

0 Email Notifications [New] [Refresh]

0 Set Variables [New] [Refresh]

0 SNMP Notifications [New] [Refresh]

0 System Operations [New] [Refresh]

**Step 3** Click the **New** button that displays on the Email Notifications row. The Email Notification Details pop-up displays.

**Step 4** Using the [field descriptions](#), below, as a guide, complete the fields as needed.

**Step 5** Click the **Save** button, or right-click in the Details and then click **Save**, to save the record and return to the Actions List.

**Step 6** If appropriate, repeat these steps for any additional Email Notifications you want to create.

### Email Notification Details Field Descriptions

The table below describes the fields and buttons that display in the Email Notification Details.

Field Name	Description
Action Criteria	This section contains criteria for performing the action.

Action Inheritance	<p>For Workflow tasks only; the records that this action applies to.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• SELF The action applies only to the workflow; it is not inherited by its children tasks. For example, if the action is defined for the <a href="#">Defined</a> status, when the workflow where the action is specified transitions into the <a href="#">Defined</a> status, the action will run for the workflow. When children within this workflow transition into the <a href="#">Defined</a> status, the action will not run.</li> <li>• SELF/CHILDREN The action applies to the workflow and any children under the workflow (it is as if each child under the workflow had the action specified on itself). For example, if the workflow or any of its children transition into the <a href="#">Defined</a> status, the action will run.</li> <li>• CHILDREN This action applies only to the children under the workflow and not the workflow itself. For example, if any child of this workflow transitions into the <a href="#">Defined</a> status, the action will run. However, when the workflow where this action is specified transitions into the <a href="#">Defined</a> status, this action will not run.</li> </ul>
Status	The <a href="#">status</a> of this task, by itself or together with an exit code, that will trigger this Email Notification action. You can specify as many statuses as needed.
Exit Codes	Specifies one or more exit codes that will trigger the event. If you specify an exit code, you must also specify at least one status. Use commas to separate multiple exit codes; use a hyphen to specify a range. Example: 1, 5, 22-30.
On Late Start	Generates the action or notification if the task started late, based on the Late Start Time specified in the task.
On Late Finish	Generates the action or notification if the task finishes late, based on the Late Finish time specified in the task.
On Early Finish	Generates the action or notification if the task finishes early, based on the Early Finish Time specified in the task.
Description	Description of this action.
<b>Action Details</b>	This section contains additional details about the action.
Email Template	<p>Name of an <a href="#">Email template</a> defined in an Email Template Details. An Email template allows you to specify standard recipients and text for outgoing emails. Enter the name of an existing Email template, select an Email template from the drop-down list, or click the Details icon to create a new Email template.</p> <p>Every <a href="#">Email template</a> specifies an Email connection. If you do not specify an Email template in this field, you must specify an Email connection in the <a href="#">Email Connection</a> field.</p> <p>If you specify both an Email template (in this field) and an <a href="#">Email Connection</a>, the Email server specified in the <a href="#">Email Connection</a> field overrides the Email server specified in this field.</p> <p>(Any information specified in an Email task overrides what is specified in an Email template.)</p>
Email Connection	<p>Required if an Email Template is not specified in the <a href="#">Email Template</a> field; name of an <a href="#">Email Connection</a>. An Email Connection specifies information about an email server. Enter the name of an existing Email Connection, or click the magnifying glass to browse for an existing Email Connection or create a new Email Connection.</p> <p>If you specify both an <a href="#">Email Template</a> and an Email Connection (in this field), the Email Connection specified in this field overrides the Email Connection specified in the <a href="#">Email Template</a> field.</p>
Reply-To	Email address of the sender. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.
To	Email address of the recipient. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.

CC	Email address of the party being sent a copy of the email, if any. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.
BCC	Email address of the party being sent a blind (hidden) copy of the email, if any. Use commas to separate multiple recipients. <a href="#">Variables and functions</a> supported.
Subject	Subject line of the email. <a href="#">Variables and functions</a> supported.
Body	Text of the email message. <a href="#">Variables and functions</a> supported. If both the email template and the email task contain text in the body, the text is appended.
Report	<a href="#">Report</a> to attach to this notification.
Report Variable	Indication of whether the <a href="#">Report</a> field is a reference field for selecting a specific <a href="#">Report</a> (unchecked) or a text field for specifying the <a href="#">Report</a> as a variable (checked). Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a> .
Attach Standard Output	For <a href="#">Agent-based tasks</a> only; attach any standard output generated by the associated task.
Attach Standard Error	For <a href="#">Agent-based tasks</a> only; attach standard error data generated by the associated task.
Attach File	<p>For <a href="#">Agent-based tasks</a> only (except z/OS); attach any single text file that is accessible by the Agent. Full path name is required. Wildcards are NOT supported.</p> <p>The Controller will request the file from the agent. If the file does not exist, the Agent will return a file output type with the content: OPSWISE WARNING - File is not available.</p>
Attach Job Log	For <a href="#">z/OS tasks</a> only; attach any job logs generated by the associated task.
Start Line	<p>Attach data beginning at the line indicated.</p> <p>Retrieve data beginning at the line indicated.</p> <ul style="list-style-type: none"> <li>• If a <b>Start Line</b> value is not specified, the default is 1.</li> <li>• If the <b>Start Line</b> value is -1, data will be retrieved starting at the end of the file.</li> </ul>
Number of Lines	Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the <a href="#">Retrieve Output Default Maximum Lines</a> Universal Controller system property.
Scan Text:	Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the <b>Number of Lines</b> above and below the first line matched.
File Name	For <a href="#">Attach File</a> only; path and file name of the file you want to attach to the email notification.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Action Details that let you perform various actions.
<b>Save</b>	Saves a new Action record in the Controller database.
<b>Update</b>	Saves updates to the record.

<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	Closes the Details pop-up of this action.

### Report Variable Resolution

Reports do not have to be unique by [Title](#). However, Reports with the same Title must be unique per [visibility](#): per User, per Group, and per Everyone.

Accordingly, the following applies regarding [Report Variable](#) field resolution.

Once resolved, the [Report Variable](#) field value could match multiple Reports with the same Title, but with different visibilities. Therefore, there is an order of precedence to choosing the report by Title:

1. User visibility (execution user).
2. Group visibility (execution user's groups).
3. Everyone visibility.
4. Any other report(s). (This is applicable only in the case of an administrator who can view all reports.)

If the execution user belongs to more than one Group, and there is more than one report matching the Title visible to those Groups, the first report found will be chosen.

If multiple reports are found by resolved report Title, the following will be logged:

```
Found more than one report with name <report-title> visible to execution user <execution-user>.
```

If the resolved report Title does not match any report visible to the execution user, the notification will be delivered containing the following error message:

```
Could not find report with name <report-title> visible to execution user <execution-user>.
```

If the report variable cannot be resolved, the notification will be delivered containing the following error message:

```
Report variable not resolved.
```

A [Report Variable](#) that resolves to blank implies that no report should be included. This is not considered an error; the notification will proceed as normal.





## Set Variable Actions

For information on how to create Set Variable actions for use within a task or workflow, see [Creating a Set Variable Action within a Task or Workflow](#) in *Variables and Functions*.

## SNMP Notification Actions

- [Overview](#)
- [Creating an SNMP Notification](#)
- [SNMP Notification Details Field Descriptions](#)

### Overview

You can create one or more SNMP notifications for any Universal Controller task. For workflow tasks, you can also specify whether you want the SNMP notification to be triggered by the workflow itself, the workflow and/or its tasks, or by the tasks only.

You can trigger the notification based on one or more of the following events associated with the task instance to which you attach the notification:

- Status or statuses of the task instance
- Exit code(s) generated by the program (along with at least one status)
- Late start
- Early or late finish

In order to generate SNMP notifications, there must be an [SNMP Manager](#) defined, which provides the server name and other pertinent information of the SNMP Manager that will receive the notification.

You also can generate notifications based on the status of [Agents and Agent clusters](#), [Cluster nodes](#), and [OMS Servers](#).

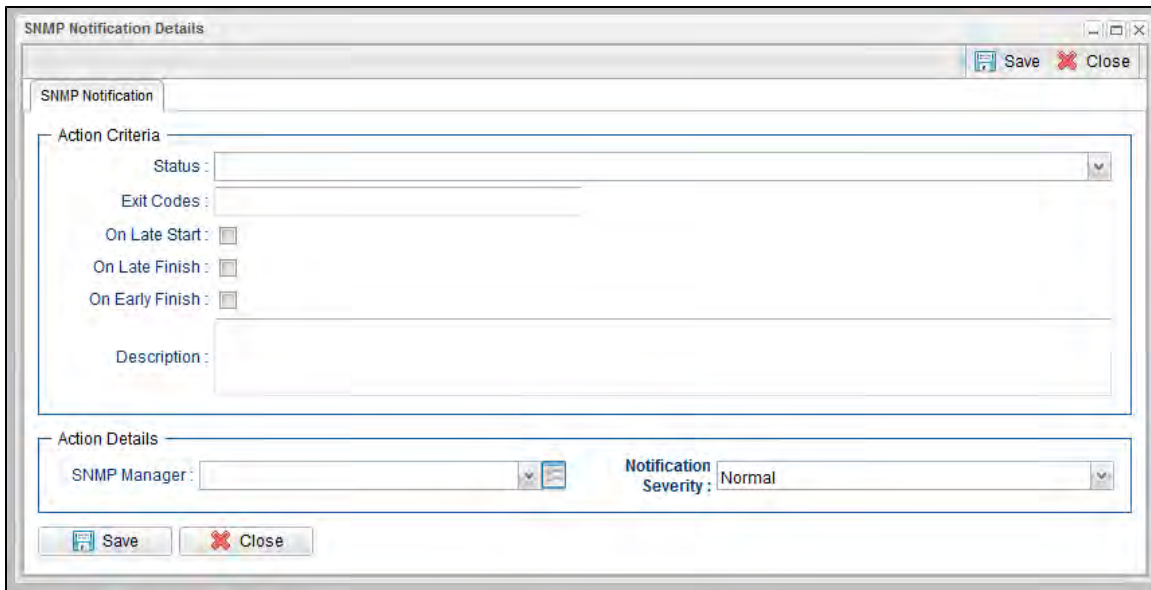
### Creating an SNMP Notification

**Step 1** Display the Task Details of the task for which you are creating the SNMP Notification.

**Step 2** Click the **Actions** tab. A list of any defined Actions for that task displays.

Status	Description	Type Details	Exit Codes	On Late Start	On Late Finish	On Early Finish	Cancel Process if Active	Override Exit Code	Updated By	Updated
FAILED			20	No	No	No	No		ops.admin	2014-06-30 10:02
CANCELLED			12	No	No	No	No		ops.admin	2014-06-30 10:02

**Step 3** Click the **New** button that displays on the SNMP Notifications row. The SNMP Notification Details pop-up displays.



**Step 4** Using the field descriptions, below, as a guide, complete the fields as needed.

**Step 5** Click the **Save** button, or right-click in the Details and then click **Save**, to save the record and return to the Actions List.

**Step 6** If appropriate, repeat these steps for any additional Email Notifications you want to create.

### SNMP Notification Details Field Descriptions

The table below describes the fields and buttons that display in the SNMP Notification Details.

Field Name	Description
<b>Action Criteria</b>	This section contains criteria for performing the action.
Action Inheritance	For Workflow tasks only; the records that this action applies to.  Options: <ul style="list-style-type: none"> <li>• <b>SELF</b> The action applies only to the workflow; it is not inherited by its children tasks. For example, if the action is defined for the <b>Defined</b> status, when the workflow where the action is specified transitions into the <b>Defined</b> status, the action will run for the workflow. When children within this workflow transition into the <b>Defined</b> status, the action will not run.</li> <li>• <b>SELF/CHILDREN</b> The action applies to the workflow and any children under the workflow (it is as if each child under the workflow had the action specified on itself). For example, if the workflow or any of its children transition into the <b>Defined</b> status, the action will run.</li> <li>• <b>CHILDREN</b> This action applies only to the children under the workflow and not the workflow itself. For example, if any child of this workflow transitions into the <b>Defined</b> status, the action will run. However, when the workflow where this action is specified transitions into the <b>Defined</b> status, this action will not run.</li> </ul>
Status	The <b>status</b> of this task, by itself or together with an exit code, that will trigger this SNMP Notification action. You can specify as many statuses as needed.
Exit Codes	Specifies one or more exit codes that will trigger the event. If you specify an exit code, you must also specify at least one status. Use commas to separate multiple exit codes; use a hyphen to specify a range. Example: 1, 5, 22-30.
On Late Start	Generates the action or notification if the task started late, based on the Late Start Time specified in the task.

<b>On Late Finish</b>	Generates the action or notification if the task finishes late, based on the Late Finish time specified in the task.
<b>On Early Finish</b>	Generates the action or notification if the task finishes early, based on the Early Finish Time specified in the task.
<b>Description</b>	Description of this SNMP notification.
<b>Action Details</b>	This section contains additional details about the action.
<b>SNMP Manager</b>	The <a href="#">SNMP Manager</a> that will receive the SNMP notification.
<b>Notification Severity</b>	<p>Severity of this notification.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Normal (1)</li> <li>• Warning (2)</li> <li>• Minor (3)</li> <li>• Major (4)</li> <li>• Critical (5)</li> </ul>
<b>Buttons</b>	This section identifies the buttons displayed above and below the Action Details that let you perform various actions.
<b>Save</b>	Saves a new Action record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	Closes the Details pop-up of this action.



## System Operation Actions

- [Overview](#)
- [Creating a System Operation](#)
- [System Operation Details Field Descriptions](#)

### Overview

A System Operation allows you to run a Universal Controller system operation based on specified conditions.

You can trigger the operation based on one or more of the following events associated with the task instance:

- Status or statuses of the task instance
- Exit code(s) generated by the program (along with at least one status)
- Late start
- Early or late finish

You can create one or more System Operations for any Controller task. For Workflow tasks, you can also specify whether you want a System Operation action to apply to the workflow itself, the workflow and/or its tasks, or to the tasks only.

System Operations will run under the security context of the of the task instance Execution User, which must have the appropriate privileges for the specified Operation Type; otherwise, the System Operation will be prohibited.

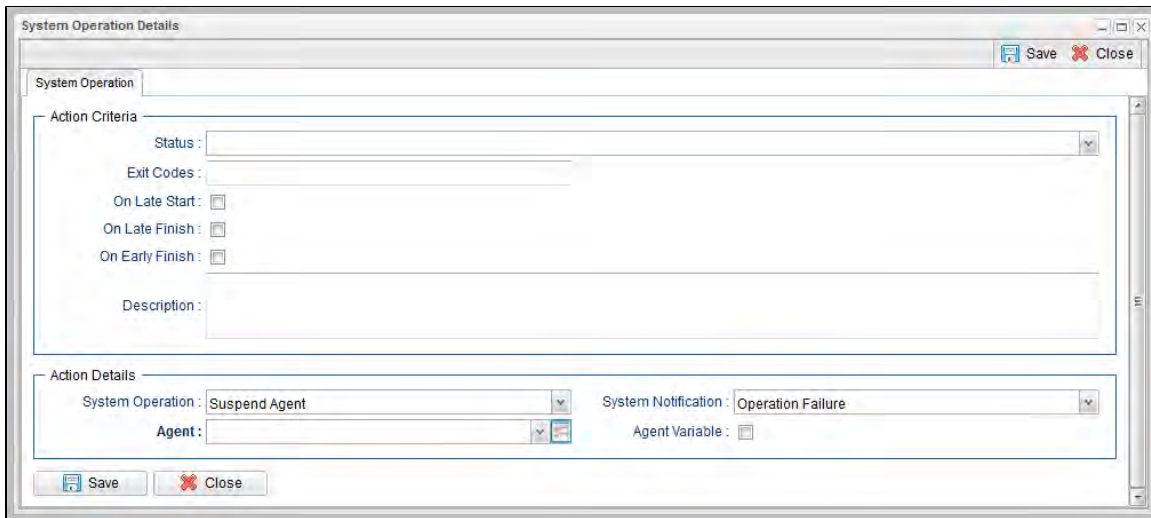
### Creating a System Operation

**Step 1** Display the Task Details of the task for which you are creating the System Operation.

**Step 2** Click the **Actions** tab. A list of any defined Actions for that task displays. For example, the following Actions list shows that two Abort Actions have been created for this task.

Status	Description	Type Details	Exit Codes	On Late Start	On Late Finish	On Early Finish	Cancel Process if Active	Override Exit Code	Updated By	Updated
FAILED			20	No	No	No	No		ops.admin	2014-06-30 10:02
CANCELLED			12	No	No	No	No		ops.admin	2014-06-30 10:02

**Step 3** Click the **New** button that displays on the System Operations row. The System Operation Details pop-up displays.



**Step 4** Using the field descriptions, below, as a guide, complete the fields as needed.

**Step 5** Click the **Save** button, or right-click in the Details and then click **Save**, to save the record and return to the Actions List.


**Step 6** If appropriate, repeat these steps for any additional System Operations you want to create.

### System Operation Details Field Descriptions

The table below describes the fields and buttons that display in the System Operation Details.

Field Name	Description
<b>Action Criteria</b>	This section contains criteria for performing the action.
Type Details	Displays - on the System Operations actions list - the <a href="#">type of System Operation</a> defined in this action.
Action Inheritance	For Workflow tasks only; the records that this action applies to.  Options: <ul style="list-style-type: none"> <li>• <b>SELF</b> The action applies only to the workflow; it is not inherited by its children tasks. For example, if the action is defined for the <a href="#">Defined</a> status, when the workflow where the action is specified transitions into the <a href="#">Defined</a> status, the action will run for the workflow. When children within this workflow transition into the <a href="#">Defined</a> status, the action will not run.</li> <li>• <b>SELF/CHILDREN</b> The action applies to the workflow and any children under the workflow (it is as if each child under the workflow had the action specified on itself). For example, if the workflow or any of its children transition into the <a href="#">Defined</a> status, the action will run.</li> <li>• <b>CHILDREN</b> This action applies only to the children under the workflow and not the workflow itself. For example, if any child of this workflow transitions into the <a href="#">Defined</a> status, the action will run. However, when the workflow where this action is specified transitions into the <a href="#">Defined</a> status, this action will not run.</li> </ul>
Status	The <a href="#">status</a> of this task, by itself or together with an exit code, that will trigger this trigger a System Operation action. You can specify as many statuses as needed.
Exit Codes	Specifies one or more exit codes that will trigger the event. If you specify an exit code, you must also specify at least one status. Use commas to separate multiple exit codes; use a hyphen to specify a range. Example: 1, 5, 22-30.
On Late Start	Generates the action or notification if the task started late, based on the Late Start Time specified in the task.



On Late Finish	Generates the action or notification if the task finishes late, based on the Late Finish time specified in the task.
On Early Finish	Generates the action or notification if the task finishes early, based on the Early Finish Time specified in the task.
Description	Description of this System Operation.
<b>Action Details</b>	This section contains additional details about the action.
System Operation	<p>Specific system operation to perform.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Suspend Agent</li> <li>• Resume Agent</li> <li>• Suspend Agent Cluster</li> <li>• Resume Agent Cluster</li> <li>• Suspend Cluster Membership</li> <li>• Resume Cluster Membership</li> <li>• Set Agent Task Execution Limit</li> <li>• Set Cluster Task Execution Limit</li> <li>• Set Virtual Resource Limit</li> <li>• Run Task Instance Command</li> </ul>
System Notification	<p>Status of the specified system operation (see above) that will trigger a system notification.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• Operation Failure (default)</li> <li>• Operation Success/Failure</li> <li>• Operation Success</li> </ul> <div style="background-color: #ffffcc; padding: 5px; margin-top: 10px;"> <p> <b>Note</b> The Controller must be <a href="#">configured for system notifications</a> in order for system notifications to be triggered.</p> </div>
Agent	If <a href="#">System Operation</a> is Suspend Agent, Resume Agent, Suspend Cluster Membership, Resume Cluster Membership, or Set Agent Task Execution Limit; Agent for which the system operation is to be performed.
Agent Variable	<p>If <a href="#">System Operation</a> is Suspend Agent, Resume Agent, Suspend Cluster Membership, Resume Cluster Membership, or Set Agent Task Execution Limit:</p> <p>If enabled, the <a href="#">Agent</a> field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p>
Agent Cluster	If <a href="#">System Operation</a> is Suspend Agent Cluster, Resume Agent Cluster, Suspend Cluster Membership, Resume Cluster Membership, or Set Cluster Task Execution Limit; Agent Cluster for which the system operation is to be performed.
Agent Cluster Variable	<p>If <a href="#">System Operation</a> is Suspend Agent Cluster, Resume Agent Cluster, Suspend Cluster Membership, Resume Cluster Membership, or Set Cluster Task Execution Limit;</p> <p>If enabled, the <a href="#">Agent Cluster</a> field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p>
Task Execution Limit	If <a href="#">System Operation</a> is Set Agent Task Execution Limit or Set Cluster Task Execution Limit; Specification for whether a Limited or Unlimited number of task instances can be run concurrently on the specified Agent / Agent Cluster. (Default is Unlimited.)
Virtual Resource	If <a href="#">System Operation</a> is Set Virtual Resource Limit; Virtual resource for which a virtual resource limit is to be set.
Virtual Resource Variable	If <a href="#">System Operation</a> is Set Virtual Resource Limit; the <a href="#">Virtual Resource</a> field (if enabled) converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: \${variable name}. The variable must be a supported type as described in <a href="#">Variables and Functions</a> .

Limit	<p>If <a href="#">System Operation</a> is Set Agent Task Execution Limit or Set Cluster Task Execution Limit, and Task Execution Limit is Limited; Number of tasks that can be run concurrently by the specified Agent / Agent Cluster.</p> <p>If <a href="#">System Operation</a> is Set Virtual Resource Limit; Virtual resource limit to be set for the specified virtual resource.</p>
Command	<p>If <a href="#">System Operation</a> is Run Task Instance Command; Type of task instance command to run.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Cancel</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Force Finish/Cancel</li> <li>• Force Finish/Cancel (Halt)</li> <li>• Skip</li> <li>• Unskip</li> <li>• Hold</li> <li>• Release</li> <li>• Release Recursive</li> <li>• Clear All Dependencies</li> <li>• Clear Exclusive</li> <li>• Clear Predecessors</li> <li>• Clear Resources</li> </ul>
Workflow Instance Name Condition	<p>If <a href="#">System Operation</a> is Run Task Instance Command; Optional. Type of condition for the name of the parent workflow task instance that contains the task on which to perform the specified action.</p> <p>The action will be performed only on a task instance in a parent workflow task instance meeting the specified condition value.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Equals</li> <li>• Starts With</li> <li>• Contains</li> <li>• Ends With</li> </ul> <p>For the selected condition (the default is Equals), a corresponding field displays (see below) that allows you to enter a value for that condition.</p>
Workflow Instance Name Equals	<p>If <a href="#">Workflow Instance Name Condition</a> = Equals; Exact name of a parent workflow task instance containing the task. <a href="#">Variables</a> are supported.</p>
Workflow Instance Name Starts With	<p>If <a href="#">Workflow Instance Name Condition</a> = Starts With; Character string at the start of the name of a parent workflow task instance containing the task. <a href="#">Variables</a> are supported.</p>
Workflow Instance Name Contains	<p>If <a href="#">Workflow Instance Name Condition</a> = Contains; Character string in the name of a parent workflow task instance containing the task. <a href="#">Variables</a> are supported.</p>
Workflow Instance Name Ends With	<p>If <a href="#">Workflow Instance Name Condition</a> = Ends With; Character string at the end of the name of a parent workflow task instance containing the task. <a href="#">Variables</a> are supported.</p>
Instance Lookup Option	<p>If <a href="#">System Operation</a> is Run Task Instance Command; Specification for how to search for the task instance to run a command against.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Instance Name</li> <li>• Instance Name/Task</li> <li>• Instance Id</li> <li>• Task</li> </ul>
Instance Name	<p>If <a href="#">Instance Lookup Option</a> is Instance Name or Instance Name/Task; Required. Name of the task instance to run the command against. <a href="#">Variables</a> supported.</p>

Instance Criteria	<p>If <a href="#">Instance Lookup Option</a> is Instance Name, Instance Name/Task, or Task; Additional criteria for selecting a specific task instance if multiple task instances have matching names.</p> <ul style="list-style-type: none"> <li>• Oldest Active Instance (default)</li> <li>• Newest Active Instance</li> <li>• Newest Instance (Unskip command only)</li> <li>• Oldest Instance (Unskip command only)</li> </ul> <p>(An Active task instance is an instance that is not in any of these statuses: Skipped, Finished, Success.)</p>
Task Reference	<p>If <a href="#">Instance Lookup Option</a> is Instance Name/Task or Task; Required. Name of the task for which the task instance was run.</p>
Task Reference Variable	<p>If <a href="#">Instance Lookup Option</a> is Instance Name/Task or Task; the Task field (above) converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: <code>\$(variable name)</code>. The variable must be a supported type as described in <a href="#">Variables and Functions</a>.</p>
Instance Id	<p>If <a href="#">Instance Lookup Option</a> is Instance Id; ID of task instance to run the command against. The instance Id (sysid) is a 32-character universally unique identifier. You can use the <code>\$(ops_task_id)</code> variable or <code>\$_siblingid('mytask')</code> function to get the instance Id.</p>
<b>Buttons</b>	<p>This section identifies the buttons displayed above and below the Action Details that let you perform various actions.</p>
<b>Save</b>	<p>Saves a new Action record in the Controller database.</p>
<b>Update</b>	<p>Saves updates to the record.</p>
<b>Delete</b>	<p>Deletes the current record.</p>
<b>Refresh</b>	<p>Refreshes any dynamic data displayed in the Details.</p>
<b>Close</b>	<p>Closes the Details pop-up of this action.</p>



## Copying Tasks

- Overview
- Copying One or More Tasks from a Tasks List
- Copying a Task from the Task Details
- Copy Permissions

### Overview

You can make copies of all Universal Controller records, including tasks, using the standard method for [Copying a Record](#): selecting **Insert** on the **Action** menu.

However, this does not make copies of other records that may be attached to the task, such as Notifications, Actions, and Variables.

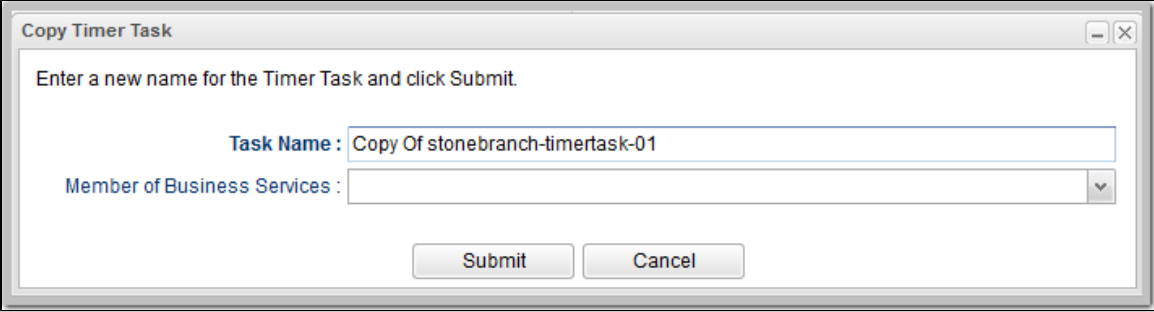
The Copy option allows you to make a complete copy of a task, including all of its associated records. It does not copy referenced records, such as virtual resources, but retains the relationship to these records for the copied task.

### Copying One or More Tasks from a Tasks List

<b>Step 1</b>	From the <a href="#">Automation Center</a> navigation pane, select <b>Tasks &gt; &lt;task type&gt;</b> . The Tasks list for that task type displays.
<b>Step 2</b>	Locate the task(s) you want to copy (see <a href="#">Filtering</a> ).
<b>Step 3</b>	<p>Copy the task(s):</p> <p><b>Copy One Task</b></p> <ol style="list-style-type: none"> <li>1. Right-click the <b>Task Name</b>.</li> <li>2. On the <b>Action</b> menu, select <b>Copy</b>. A Copy Task pop-up dialog displays.</li> </ol> <div data-bbox="300 1039 1453 1354" data-label="Image"> </div> <ol style="list-style-type: none"> <li>3. Enter a new name for the task and, optionally, select any <a href="#">Business Services</a> that you want the task assigned to.</li> <li>4. Click <b>Submit</b> to create a copy of the task.</li> </ol> <p><b>Copy Multiple Tasks</b></p> <ol style="list-style-type: none"> <li>1. Ctrl-Click the tasks you want to copy.</li> <li>2. Right-click any of the selected tasks.</li> <li>3. On the <b>Action</b> menu, select <b>Copy</b>.</li> <li>4. On the Confirmation pop-up that displays, click <b>OK</b>. The copied tasks are added to the list, with <b>Copy of</b> added as a prefix to the Task Name for each task. If a task with that <b>Copy of</b> name already exists, a numerical suffix is added to the task name.</li> </ol>

### Copying a Task from the Task Details

<b>Step 1</b>	Select a task from a Tasks list. The Task Details for that task displays.
---------------	---

<p><b>Step 2</b></p>	<p>Either:</p> <ul style="list-style-type: none"> <li>• Click the <b>Copy</b> button.</li> <li>• Right-click the Details to display the <a href="#">Action menu</a>, and then click <b>Copy</b>.</li> </ul> <p>A Copy Task pop-up dialog displays.</p> 
<p><b>Step 3</b></p>	<p>Enter a new name for the task and, optionally, select any <a href="#">Business Services</a> that you want the task assigned to.</p>
<p><b>Step 4</b></p>	<p>Click <b>Submit</b> to create a copy of the task.</p>

## Copy Permissions

Your ability to copy tasks is restricted to tasks with Business Service memberships that are specified in your task record [permissions](#).

For detailed information, see [Business Services](#).

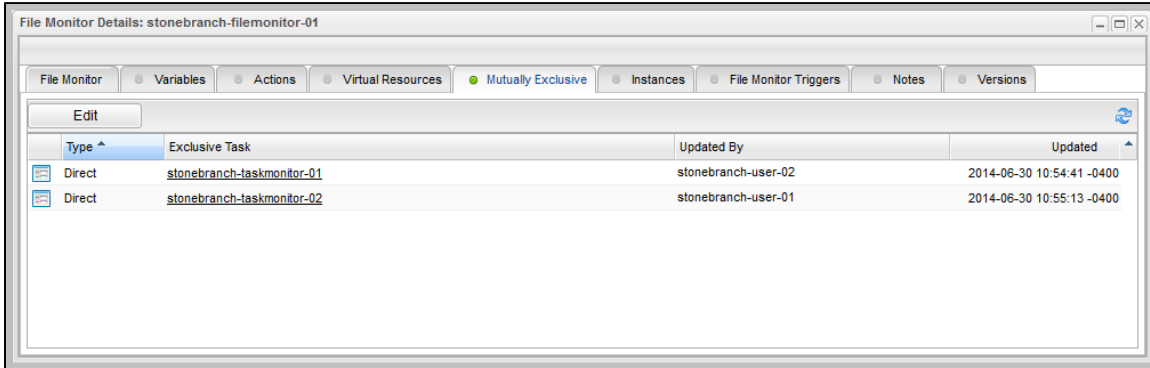
## Setting Mutually Exclusive Tasks

### Setting Mutually Exclusive Tasks

You can set a task to be mutually exclusive with one or more other tasks. Universal Controller does not permit mutually exclusive tasks to run at the same time; if one is running, the other(s) will wait before running.

To set mutually exclusive tasks:

**Step 1** Select a task from a Task list and, in the Task Details for that task, click the **Mutually Exclusive Tasks** tab. The Mutually Exclusive Tasks list displays a list of any tasks that have been set to be mutually exclusive with this task:



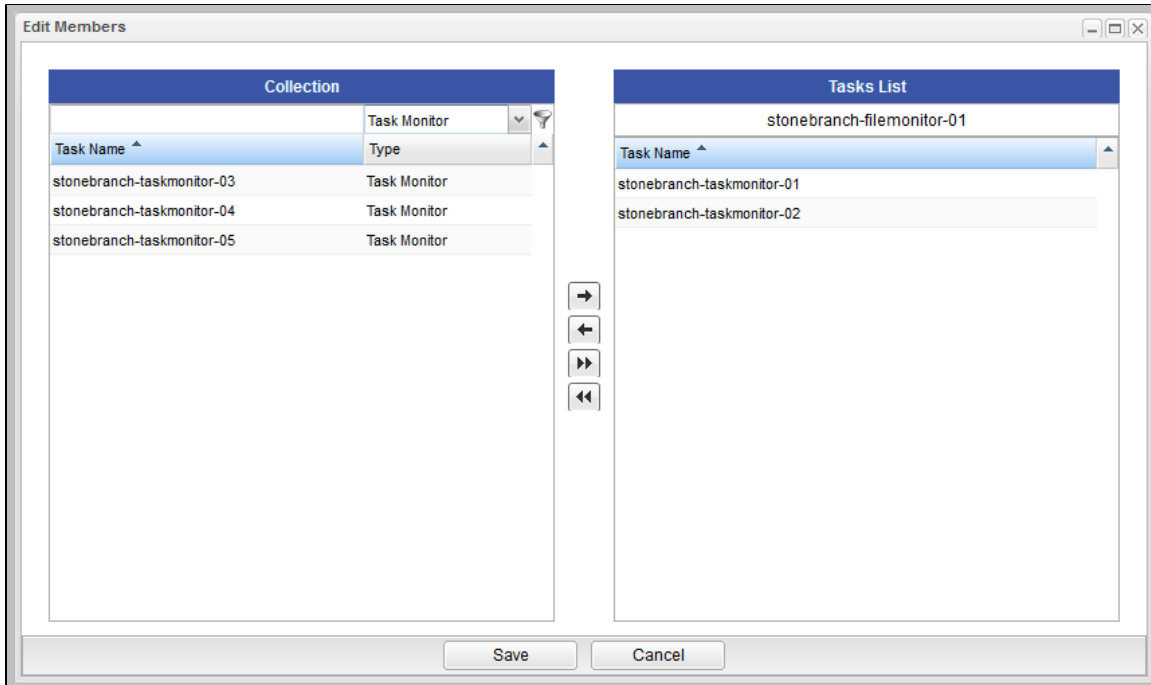
For each **Exclusive Task** on the list, the **Type** field indicates how the mutually exclusive dependency on the **Exclusive Task** was added to this task:

- **Direct** indicates that the mutually exclusive dependency on the **Exclusive Task** was added to this task manually in these task Details.
- **Indirect** indicates that the mutually exclusive dependency on the **Exclusive Task** was added to this task automatically when mutually exclusive dependency on this task was added manually to the **Exclusive Task** in its task Details.



You only can delete **Direct** mutually exclusive tasks.

**Step 2** Click the **Edit** button to display the Edit Members dialog.



- The **Collection** window displays all Controller tasks. To display only a specific type of task, select that task type from the drop-down field at the top of the **Collection** window.
- The **Tasks List** window displays all tasks that are to be run mutually exclusive with this task.

**Step 3** If you want to filter the tasks in the Collection window, click the filter icon (see [Filtering](#) for information about how to construct a filter.)

**Step 4** Move tasks from the **Collection** window to the **Tasks List** window:

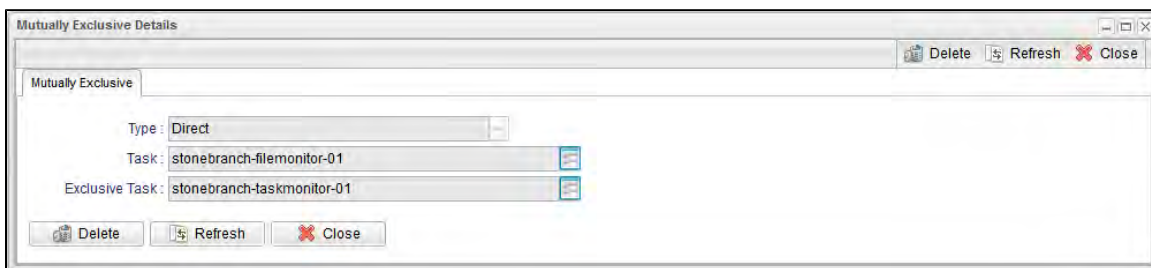
1. To move a single task, double-click it or click it once and then click the > arrow.
2. To move multiple tasks, Ctrl-click them and then click the > arrow.
3. To move all tasks, click the >> arrow.

To move tasks from the **Tasks List** window to the **Collection** window:

1. To move a single task, double-click it or click it once and then click the < arrow.
2. To move multiple tasks, Ctrl-click them and then click the < arrow.
3. To move all tasks, click the << arrow.

**Step 5** Click **Save**. All of the tasks in the **Tasks List** window will be listed as Type **Direct** on the Mutually Exclusive list for this task, and all of the tasks in the **Tasks List** window will list this task as Type **Indirect** on *their* Mutually Exclusive Tasks lists.

**Step 6** Click the Details icon for any task on the list to display its Mutually Exclusive Details.



See the [field descriptions](#), below, for a description of all fields that display in the Mutually Exclusive Details.

## Mutually Exclusive Task Field Descriptions



The following table describes the fields that display in the Mutually Exclusive Task Details.

Field Name	Description
Type	Type of Mutually Exclusive task: Direct or Indirect.
Task	Name of the task for which this task was made Mutually Exclusive.
Exclusive Task	Name of this Mutually Exclusive task.

## Creating Notes

- Introduction
- Adding a Note
- Note Details Field Descriptions
- Deleting a Note

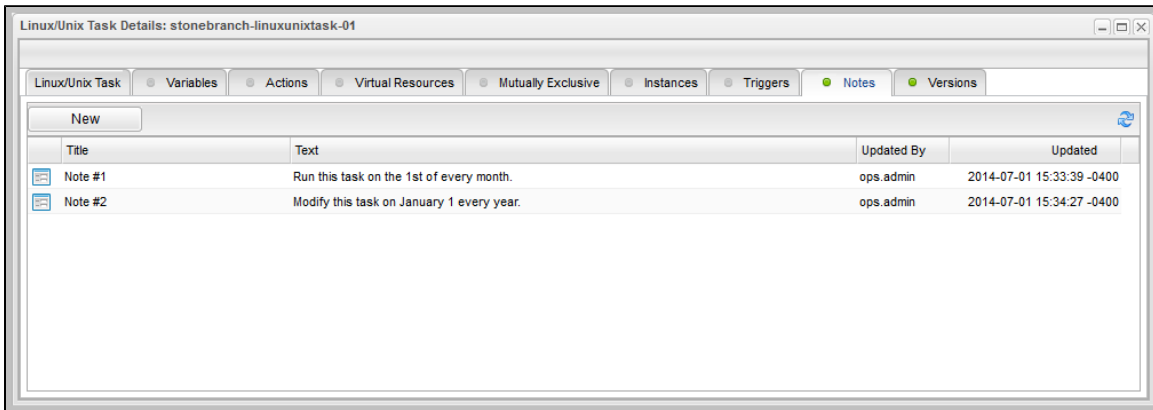
### Introduction

You can create a note for any Universal Controller *task* or *script*. The note can consist of information needed by operations personnel or other instructions or tips.

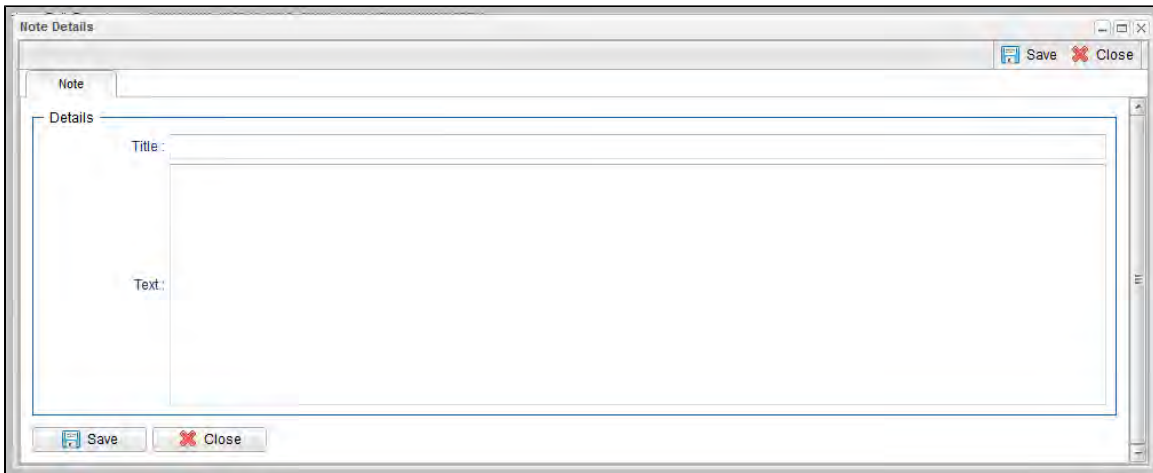
### Adding a Note

**Step 1** Open the task or script to which you want to attach a note.

**Step 2** Click the **Notes** tab. The Notes list displays a list of notes (if any) that have been created for this task or script.



**Step 3** Click the **New** button. The Note Details displays.



**Step 4** Enter a **Title** and **Text** for the note.

**Step 5** Click the **Save** button.

### Note Details Field Descriptions

Field Name	Description
<b>Details</b>	This section contains detailed information about the note.
Title	Title of this note. Displays in the Title column on the Notes list.
Text	Text of the note.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Note Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Delete</b>	Deletes the current record.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task.

## Deleting a Note

To delete a note, either:

- Right-click the note in the Notes list and then click **Delete**.
- [Open](#) the note you want to delete and click the **Delete** button.

## Manually Running and Controlling Tasks

- Overview
- Issuing Commands Against Task Instances
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- Commands Supported for Task Instance Statuses
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  - Cancel a Task Instance from the Workflow Monitor
- Force Finishing a Task Instance
  - Force Finish a Task Instance from the Activity Monitor or Task Instances List
  - Force Finish a Task Instance from the Workflow Monitor
- Force Finishing (Halt) a Task Instance
  - Force Finish (Halt) a Task Instance from the Activity Monitor or Task Instances List
  - Force Finish (Halt) a Task Instance from the Workflow Monitor
- Force Finish/Cancelling a Task Instance
  - Force Finish/Cancel a Task Instance from the Activity Monitor
  - Force Finish/Cancel a Task Instance from the Workflow Monitor
- Force Finish/Cancelling (Halt) a Task Instance
  - Force Finish/Cancel (Halt) a Task Instance from the Activity Monitor
  - Force Finish/Cancel (Halt) a Task Instance from the Workflow Monitor
- Putting a Task Instance on Hold
  - Hold a Task Instance from the Activity Monitor or Task Instances List
  - Hold a Task Instance from the Workflow Monitor
- Releasing a Task Instance from Hold
  - Release a Held Task Instance from the Activity Monitor or Task Instances List
  - Release a Held Task Instance from the Workflow Monitor
- Skipping a Task Instance
  - Skip a Task Instance from the Activity Monitor or Task Instances List
  - Skip a Task Instance from the Workflow Monitor
- Showing or Hiding Skipped Task Instances
  - Setting Show / Hide Skipped Tasks from the Workflow Task Details
  - Setting Show / Hide Skipped Tasks from the Workflow Task Instance Details
  - Setting Show / Hide Skipped Tasks from the Workflow Monitor
- Unskipping a Task Instance
  - Unskip a Task Instance from the Activity Monitor or Task Instances List
  - Unskip a Task Instance from the Workflow Monitor
- Marking a Dependency as Satisfied
  - Marking a Dependency as Satisfied from the Workflow Monitor
- Clearing Predecessor Dependencies of a Task Instance
  - Clearing Predecessor Dependencies of a Task Instance from the Workflow Monitor
- Clearing Resource Dependencies of a Task Instance
  - Clear Resource Dependencies of a Task Instance from the Activity Monitor or Task Instances List
  - Clear Resource Dependencies of a Task Instance from the Workflow Monitor
- Clearing Mutually Exclusive Dependencies of a Task Instance
  - Clear Mutually Exclusive Dependencies of a Task Instance from the Activity Monitor or Task Instances List
  - Clear Mutually Exclusive Dependencies of a Task Instance from the Workflow Monitor
- Clearing All Dependencies of a Task Instance
  - Clear All Dependencies of a Task Instance from the Activity Monitor or Task Instances List
  - Clear All Dependencies of a Task Instance within a Workflow from the Workflow Monitor
  - Clear All Dependencies of a Workflow Task Instance from the Workflow Monitor
- Clearing Time Wait/Delay Specifications of a Task Instance
  - Clear All Time Wait/Delay Specifications of a Task Instance from the Activity Monitor or Task Instances List
  - Clear All Time Wait/Delay Specifications of a Task Instance from the Workflow Monitor
  - Clear All Time Wait/Delay Specifications of a Task Instance from the Task Instance Details

## Overview

A number of commands are available on the [Activity Monitor](#) and the [Task Instances list](#) that allow you to intervene in task processing where needed. Some commands are applicable only to certain task types and others are appropriate only when the task is in a particular status. In addition, commands require appropriate [permissions](#).

## Issuing Commands Against Task Instances

You can issue commands against task instances from:

- [Activity Monitor](#)
- [Task Instances list](#) (and the [Task Instances list for a specific task](#))
- [Workflow Monitor](#).

See [Commands Supported for Task Instance Statuses](#) for a list of task instances (and their statuses) for which these commands can be issued.

See [Task Instance Status Types](#) for a description of each type of task instance status.

Command	Description
Cancel	Cancels a running task instance (see <a href="#">Cancelling a Task Instance</a> ).
Clear All Dependencies	Workflow tasks only: Clears all dependencies (predecessors, resources, and exclusive) of a task instance (see <a href="#">Clearing All Dependencies of a Task Instance</a> ).
Clear Exclusive	Clears mutually exclusive dependencies of a task instance (see <a href="#">Clearing Mutually Exclusive Dependencies of a Task Instance</a> ).
Clear Predecessors	Workflow tasks only: Clears predecessor dependencies of a task instance (see <a href="#">Clearing Predecessor Dependencies of a Task Instance</a> ).
Clear Resources	Clears resource dependencies of a task instance (see <a href="#">Clearing Resource Dependencies of a Task Instance</a> ).
Clear Time/Wait Delay	Clears all Wait To Start and Delay On Start specifications for this task instance (see <a href="#">Clearing Time Wait/Delay Specifications of a Task Instance</a> ).
Force Finish	Places a task instance into the Finished status (see <a href="#">Force Finishing a Task Instance</a> ).
Force Finish (Halt)	Places a task instance into the Finished status (see <a href="#">Force Finishing (Halt) a Task Instance</a> ).
Force Finish/Cancel	Cancels a task and places it into the Finished status (see <a href="#">Force Finish/Cancelling a Task Instance</a> ).
Force Finish/Cancel (Halt)	Cancels a task and places it into the Finished status (see <a href="#">Force Finish/Cancelling (Halt) a Task Instance</a> ).
Hold	Temporarily prevents a task instance from running (see <a href="#">Putting a Task Instance on Hold</a> ).
Release	Removes a task instance from being on Hold (see <a href="#">Releasing a Task Instance from Hold</a> ).
Release Recursive	Workflow tasks only: Removes a workflow and its task instances from being on Hold (see <a href="#">Releasing a Task Instance from Hold</a> ).
Re-run	Not applicable for Workflow tasks: Re-runs task instance (see <a href="#">Re-running a Task Instance</a> ).
Retrieve Output	<a href="#">Retrieves output</a> (standard out and/or standard error) for any running or completed task instance.
Set Completed	Sets a <a href="#">Manual Task</a> instance to the Success status.
Set Priority	Sets the priority of a task instance in Started, Running, or Queued status to High, Medium, or Low (see <a href="#">Changing the Priority of a Task Instance</a> ).
Set Started	Resets the Started Time of a <a href="#">Manual Task</a> instance.
Skip	Disregards a task instance (see <a href="#">Skipping a Task Instance</a> ).
Skip Path	Disregards a task instance and all of its dependent task instances (see <a href="#">Skipping a Task Instance</a> ).
Unskip	Removes the Skip status of a task instance (see <a href="#">Unskipping a Task Instance</a> ).

## Issuing Commands from the Activity Monitor

Instance Name	Type	Status	Invoked By	Start Time	End Time	Updated
lecu-wkfl-sleep	Workflow	Success	Manually Launched	2014-09-02 12:57:55 -0400	2014-09-02 12:58:36 -0400	2014-09-02 12:58:36 -0400
sleep 10	Timer	Success	Workflow: lecu-wkfl-sleep	2014-09-02 12:58:26 -0400	2014-09-02 12:58:36 -0400	2014-09-02 12:58:36 -0400
Sleep 30	Timer	Success	Workflow: lecu-wkfl-sleep	2014-09-02 12:57:56 -0400	2014-09-02 12:58:26 -0400	2014-09-02 12:58:26 -0400
Sleep 0	Timer	Success	Workflow: lecu-wkfl-sleep	2014-09-02 12:57:56 -0400	2014-09-02 12:57:56 -0400	2014-09-02 12:57:56 -0400
Sleep 60	Timer	Skipped	Workflow: lecu-wkfl-sleep		2014-09-02 12:57:55 -0400	2014-09-02 12:57:55 -0400
Sleep 60	Timer	Skipped	Workflow: lecu-wkfl-sleep		2014-09-02 12:57:55 -0400	2014-09-02 12:57:55 -0400
Sleep 60	Timer	Skipped	Workflow: lecu-wkfl-sleep		2014-09-02 12:57:55 -0400	2014-09-02 12:57:55 -0400
Sleep 30	Timer	Skipped	Workflow: lecu-wkfl-sleep		2014-09-02 12:57:55 -0400	2014-09-02 12:57:55 -0400
Sleep 30	Timer	Skipped	Workflow: lecu-wkfl-sleep		2014-09-02 12:57:55 -0400	2014-09-02 12:57:55 -0400
win-exit-code	Windows	Failed	Manually Launched	2014-09-02 12:44:03 -0400	2014-09-02 12:44:03 -0400	2014-09-02 12:44:03 -0400
zos-workflow-regression-test	Workflow	Success	Manually Launched	2014-09-02 11:52:47 -0400	2014-09-02 12:10:30 -0400	2014-09-02 12:10:30 -0400
zos-workflow-simple-load-test-01	Workflow	Success	Workflow: zos-workflow-regression-test	2014-09-02 11:56:39 -0400	2014-09-02 12:10:30 -0400	2014-09-02 12:10:30 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:29 -0400	2014-09-02 12:10:29 -0400	2014-09-02 12:10:30 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:25 -0400	2014-09-02 12:10:26 -0400	2014-09-02 12:10:27 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:23 -0400	2014-09-02 12:10:23 -0400	2014-09-02 12:10:24 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:20 -0400	2014-09-02 12:10:20 -0400	2014-09-02 12:10:21 -0400
zos-workflow-simple-load-test-02	Workflow	Success	Workflow: zos-workflow-regression-test	2014-09-02 11:56:39 -0400	2014-09-02 12:10:19 -0400	2014-09-02 12:10:19 -0400
zos-task-load-simple-02	z/OS	Success	Workflow: zos-workflow-simple-load-test-02	2014-09-02 12:10:17 -0400	2014-09-02 12:10:17 -0400	2014-09-02 12:10:19 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:15 -0400	2014-09-02 12:10:15 -0400	2014-09-02 12:10:19 -0400
zos-task-load-simple-02	z/OS	Success	Workflow: zos-workflow-simple-load-test-02	2014-09-02 12:10:12 -0400	2014-09-02 12:10:12 -0400	2014-09-02 12:10:15 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:11 -0400	2014-09-02 12:10:11 -0400	2014-09-02 12:10:14 -0400
zos-workflow-simple-load-test-03	Workflow	Success	Workflow: zos-workflow-regression-test	2014-09-02 11:56:39 -0400	2014-09-02 12:10:13 -0400	2014-09-02 12:10:13 -0400
zos-task-load-simple-03	z/OS	Success	Workflow: zos-workflow-simple-load-test-03	2014-09-02 12:10:09 -0400	2014-09-02 12:10:09 -0400	2014-09-02 12:10:13 -0400
zos-task-load-simple-02	z/OS	Success	Workflow: zos-workflow-simple-load-test-02	2014-09-02 12:10:07 -0400	2014-09-02 12:10:08 -0400	2014-09-02 12:10:11 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:06 -0400	2014-09-02 12:10:06 -0400	2014-09-02 12:10:10 -0400

### Issue a Command Against a Single Task Instance

Either:

- Right-click a task instance on the list to display an **Action menu** of available commands for that task instance.
- Click the Details icon of a task instance to display the Task Instance Details, and then right-click in the Details to display an **Action menu** of available commands for that task instance.

### Issue a Command Against Multiple Task Instances

Press **Ctrl** and right-click each task instance that you want to issue a command against to display an **Action menu** of available commands that can be issued against all of the selected task instances.

(You also can press **Ctrl** and right-click a single task instance and then press **Shift** and right-click another task instance to select the group of task instances between the first and second task instance, inclusive.)

### Issuing Commands from the Task Instances List

Instance Name	Type	Status	Invoked By	Start Time	End Time	Updated
ecu-uag-003237rc	z/OS	Success	Manually Launched	2014-08-21 21:28:09 -0400	2014-08-21 21:28:10 -0400	2014-08-21 21:28:11 -0400
zos-task-run-simple	z/OS	Success	Workflow: zos-workflow-regression-test	2014-08-21 21:29:39 -0400	2014-08-21 21:29:39 -0400	2014-08-21 21:29:41 -0400
zos-task-security-auth-01	z/OS	Success	Workflow: zos-workflow-user-authentication	2014-08-21 21:29:42 -0400	2014-08-21 21:29:42 -0400	2014-08-21 21:29:44 -0400
zos-task-security-auth-02	z/OS	Success	Workflow: zos-workflow-user-authentication	2014-08-21 21:29:42 -0400	2014-08-21 21:29:43 -0400	2014-08-21 21:29:45 -0400
zos-task-security-auth-03	z/OS	Success	Workflow: zos-workflow-user-authentication	2014-08-21 21:29:43 -0400	2014-08-21 21:29:44 -0400	2014-08-21 21:29:47 -0400
Sleep 0	Timer	Success	Workflow: zos-workflow-user-authentication	2014-08-21 21:29:47 -0400	2014-08-21 21:29:47 -0400	2014-08-21 21:29:47 -0400
zos-task-security-auth-13	z/OS	Finished	Workflow: zos-workflow-user-authentication		2014-08-21 21:29:48 -0400	2014-08-21 21:29:48 -0400
zos-task-security-auth-10	z/OS	Finished	Workflow: zos-workflow-user-authentication		2014-08-21 21:29:48 -0400	2014-08-21 21:29:48 -0400
zos-task-security-auth-12	z/OS	Finished	Workflow: zos-workflow-user-authentication		2014-08-21 21:29:48 -0400	2014-08-21 21:29:48 -0400
zos-task-security-auth-11	z/OS	Finished	Workflow: zos-workflow-user-authentication		2014-08-21 21:29:48 -0400	2014-08-21 21:29:49 -0400
zos-task-failure	z/OS	Skipped	Workflow: zos-workflow-user-authentication		2014-08-21 21:29:48 -0400	2014-08-21 21:29:49 -0400
Sleep 0	Timer	Success	Workflow: zos-workflow-user-authentication	2014-08-21 21:29:49 -0400	2014-08-21 21:29:49 -0400	2014-08-21 21:29:49 -0400
zos-workflow-user-authenti...	Work...	Success	Workflow: zos-workflow-regression-test	2014-08-21 21:29:41 -0400	2014-08-21 21:29:49 -0400	2014-08-21 21:29:49 -0400
zos-step-action-setup	Timer	Success	Workflow: zos-workflow-step-actions	2014-08-21 21:29:49 -0400	2014-08-21 21:29:50 -0400	2014-08-21 21:29:50 -0400

### Issue a Command Against a Single Task Instance

Either:

- Right-click a task instance to display an [Action menu](#) of available commands for that task instance.
- Click a task instance to display the Task Instance Details below the list, or click the Details icon to display a Details pop-up for the task instance, and then right-click in the Details to display an [Action menu](#) of available commands for that task instance.

### Issue a Command Against Multiple Task Instances

Press **Ctrl** and right-click each task instance that you want to issue a command against to display an [Action menu](#) of available commands that can be issued against all of the selected task instances.

(You also can press **Ctrl** and right-click a single task instance and then press **Shift** and right-click another task instance to select the group of task instances between the first and second task instance, inclusive.)

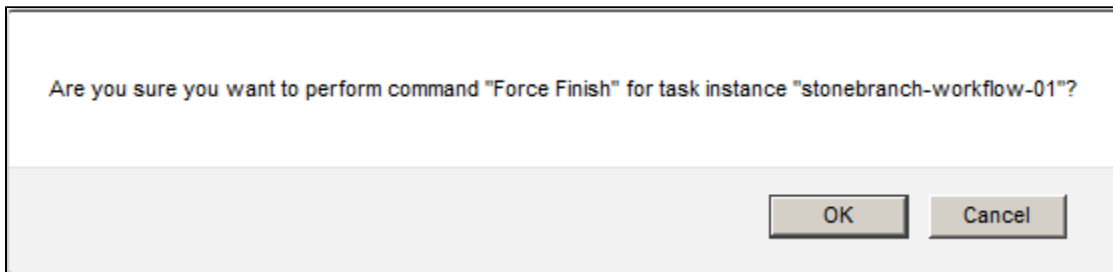
## Issuing Commands from the Workflow Monitor

From the Workflow Monitor, you can issue a command against a single task instance within the workflow or against the workflow task instance itself.

### Command Confirmation

If you want to receive a confirmation message after issuing a command but before the command is performed, set the [System Default Confirm Task Instance Commands](#) Universal Controller system property to **Yes** (the default is **No**).

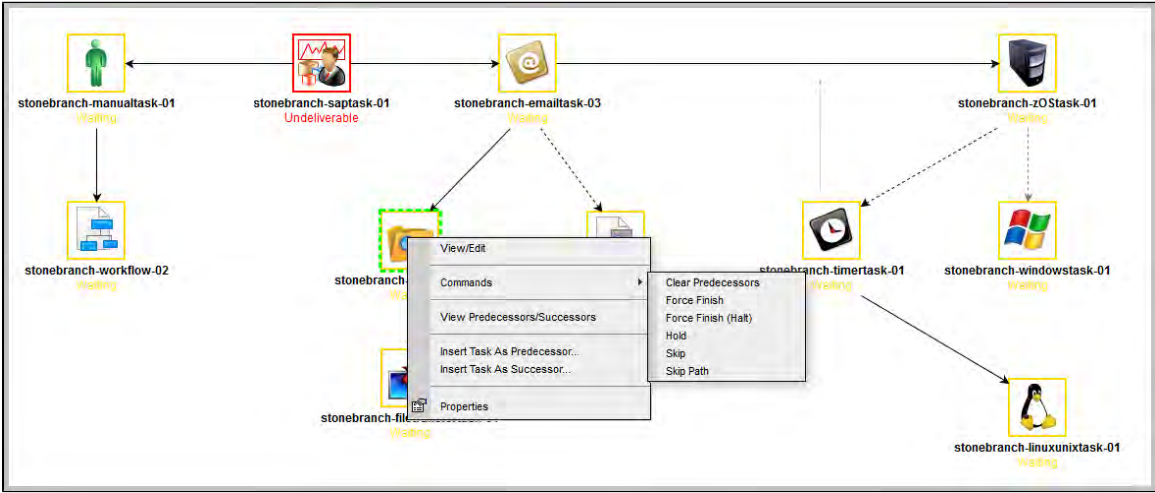
For example:



### Issue a Command Against a Task Instance within the Workflow

- Step 1** Right-click the task instance to display a pop-up menu of commands appropriate for the selected task instance.
- Step 2** Click **Commands** and then click the command that you want to issue against the selected task instance.

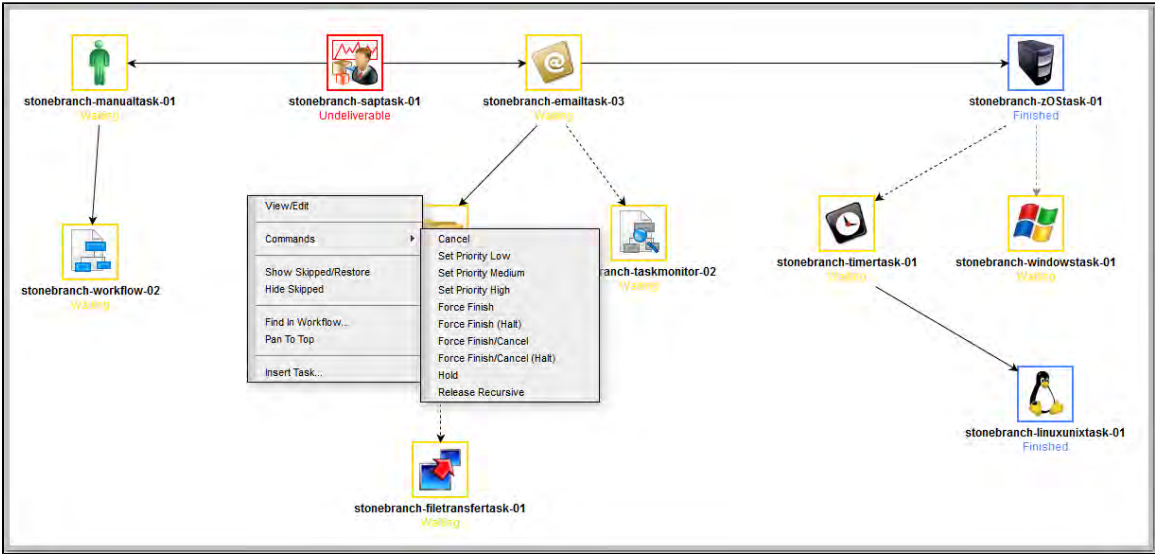
For example:



**Issue a Command Against the Workflow Task Instance**

- Step 1** Right-click the Workflow Monitor canvas to display a pop-up menu of commands appropriate for the workflow task instance.
- Step 2** Click **Commands** and then click the command that you want to issue against the workflow task instance.

For example:



**Commands Supported for Task Instance Statuses**

The following table identifies all possible task instance statuses, the task types they are valid for, and the commands that you can issue against a task instance in each status.

For a description of each status, see [Task Instance Status Types](#).

For a description of each command, see [Issuing Commands Against Task Instances](#).

For details and instructions on issuing these commands, see the specific section (below) on this page.



Status	Task Type	Supported Commands
Action Required (60)	Manual	<ul style="list-style-type: none"> <li>• Cancel</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Force Finish/Cancel</li> <li>• Force Finish/Cancel (Halt)</li> <li>• Set Started</li> <li>• Set Completed</li> </ul>
Cancel Pending (99)	Agent-based	<ul style="list-style-type: none"> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> </ul>
Cancelled (130)	All	<ul style="list-style-type: none"> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Re-run - Not applicable for Workflow tasks.</li> </ul>
Confirmation Required (125)	z/OS	<ul style="list-style-type: none"> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Re-run - Not applicable for Workflow tasks.</li> </ul>
Defined (0)	All	<ul style="list-style-type: none"> <li>• Clear All Dependencies</li> <li>• Clear Predecessors</li> <li>• Clear Time Wait/Delay</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Hold</li> <li>• Skip</li> <li>• Skip Path</li> <li>• Release Recursive - Workflow tasks only.</li> </ul>
Exclusive Requested (22)	All	<ul style="list-style-type: none"> <li>• Clear All Dependencies</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Hold</li> <li>• Skip</li> <li>• Skip Path</li> </ul>
Exclusive Wait (23)	All	<ul style="list-style-type: none"> <li>• Clear All Dependencies</li> <li>• Clear Exclusive</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Hold</li> <li>• Skip</li> <li>• Skip Path</li> <li>• Release Recursive - Workflow tasks only.</li> </ul>
Execution Wait (33)	Agent-based	<ul style="list-style-type: none"> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Hold</li> <li>• Skip</li> <li>• Skip Path</li> </ul>
Failed (140)	All (except Workflows*)	<ul style="list-style-type: none"> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Re-run - Not applicable for Workflow tasks.</li> <li>• Retrieve Output</li> </ul>

Finished (190)	All	<ul style="list-style-type: none"> <li>• Re-run - Not applicable for Workflow tasks.</li> <li>• Retrieve Output</li> </ul>
Held (20)	All	<ul style="list-style-type: none"> <li>• Clear All Dependencies</li> <li>• Clear Time Wait/Delay</li> <li>• Clear Predecessors</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Release</li> <li>• Release Recursive - Workflow tasks only.</li> <li>• Skip</li> <li>• Skip Path</li> </ul>
In Doubt (110)	Agent-based	<ul style="list-style-type: none"> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> </ul>
Queued (40)	Agent-based	<ul style="list-style-type: none"> <li>• Cancel</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Hold</li> <li>• Set Priority</li> </ul>
Resource Requested (25)	All tasks using Virtual Resources	<ul style="list-style-type: none"> <li>• Clear All Dependencies</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Hold</li> <li>• Skip</li> <li>• Skip Path</li> </ul>
Resource Wait (30)	All tasks using Virtual Resources	<ul style="list-style-type: none"> <li>• Clear All Dependencies</li> <li>• Clear Resources</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Hold</li> <li>• Skip</li> <li>• Skip Path</li> <li>• Release Recursive - Workflow tasks only.</li> </ul>
Running (80)	All	<ul style="list-style-type: none"> <li>• Cancel</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Force Finish/Cancel</li> <li>• Force Finish/Cancel (Halt)</li> <li>• Release Recursive - Workflow tasks only.</li> <li>• Set Priority</li> </ul>
Running Problems (81)	Workflow	<ul style="list-style-type: none"> <li>• Cancel</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Force Finish/Cancel</li> <li>• Force Finish/Cancel (Halt)</li> <li>• Hold</li> <li>• Release Recursive - Workflow tasks only.</li> <li>• Retrieve Output</li> </ul>
Skipped (180)	All	<ul style="list-style-type: none"> <li>• Unskip</li> </ul>

Start Failure (120)	All	<ul style="list-style-type: none"> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Re-run - Not applicable for Workflow tasks.</li> </ul>
Started (70)	Agent-based and Manual	<ul style="list-style-type: none"> <li>• Cancel</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Force Finish/Cancel</li> <li>• Force Finish/Cancel (Halt)</li> <li>• Retrieve Output</li> <li>• Set Completed - Manual tasks only.</li> <li>• Set Priority</li> </ul>
Submitted (43)	z/OS	<ul style="list-style-type: none"> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> </ul>
Success (200)	All	<ul style="list-style-type: none"> <li>• Re-run - Not applicable for Workflow tasks.</li> <li>• Retrieve Output</li> </ul>
Time Wait (15)	All (except Timer)	<ul style="list-style-type: none"> <li>• Clear All Dependencies</li> <li>• Clear Time Wait/Delay</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Hold</li> <li>• Skip</li> <li>• Skip Path</li> <li>• Release Recursive - Workflow tasks only</li> </ul>
Undeliverable (35)	Agent-based	<ul style="list-style-type: none"> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Hold</li> <li>• Skip</li> <li>• Skip Path</li> </ul>
Waiting (10)	All	<ul style="list-style-type: none"> <li>• Clear All Dependencies</li> <li>• Clear Predecessors</li> <li>• Clear Time Wait/Delay</li> <li>• Force Finish</li> <li>• Force Finish (Halt)</li> <li>• Hold</li> <li>• Skip</li> <li>• Skip Path</li> <li>• Release Recursive - Workflow tasks only</li> </ul>

\* Workflows cannot go to Failed status.

## Agent-Based Task Types

The following task types are Agent-based task types:

- Linux/Unix
- Windows
- z/OS
- Universal Command
- SAP
- File Transfer
- File Monitor
- FTP File Monitor
- System Monitor

## Manually Launching a Task

Two methods are available for manually launching a task:

- From a tasks list
- From task Details

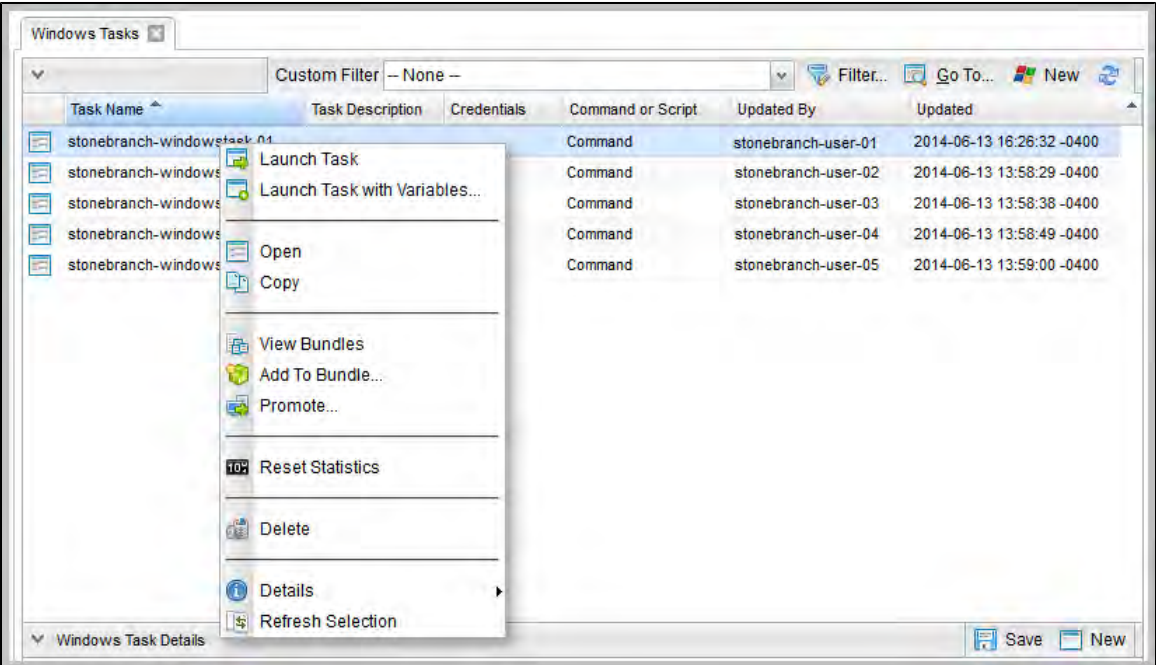
### Launch One or More Tasks from a Tasks List

**Step 1** From the **Automation Center** navigation pane, select **Tasks > <type of task>**. The Tasks list for that task type displays.

**Step 2** Either:

- Right-click a single task.
- Ctrl-click multiple tasks, release the Ctrl key, and right-click any of the selected tasks.

An **Action** menu displays.



Task Name	Task Description	Credentials	Command or Script	Updated By	Updated
stonebranch-windows-task-01	Launch Task		Command	stonebranch-user-01	2014-06-13 16:26:32 -0400
stonebranch-windows-task-02	Launch Task with Variables...		Command	stonebranch-user-02	2014-06-13 13:58:29 -0400
stonebranch-windows-task-03			Command	stonebranch-user-03	2014-06-13 13:58:38 -0400
stonebranch-windows-task-04			Command	stonebranch-user-04	2014-06-13 13:58:49 -0400
stonebranch-windows-task-05			Command	stonebranch-user-05	2014-06-13 13:59:00 -0400

**Step 3** Select either:

- **Launch Task**
- **Launch Task with Variables**

**Note**  
If you selected multiple tasks, **Launch with Variables** is disabled.

Universal Controller creates an instance of each selected task and runs it.

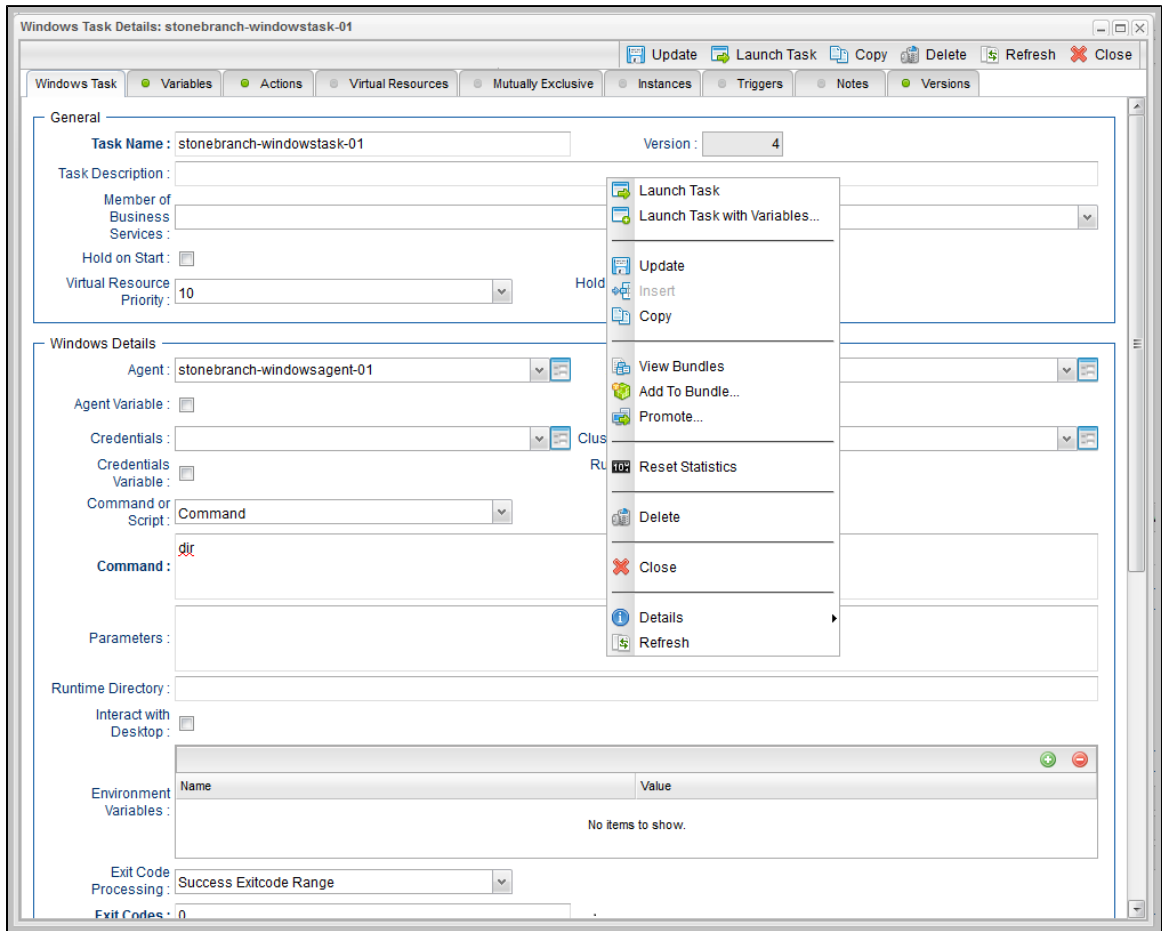
**Step 4** To view Details about running task instances, select **Task Instances > Activity** from the **Automation Center** navigation pane and click on the task instance.

### Launch a Task from Task Details

**Step 1** Select the task you want to launch.

**Step 2** Either:

- Click the **Launch Task** button.
- Right-click anywhere in the Details to display an **Action menu** and click either:
  - **Launch Task**
  - **Launch Task with Variables**



## Provide Temporary Variable Values and Launch a Task Manually

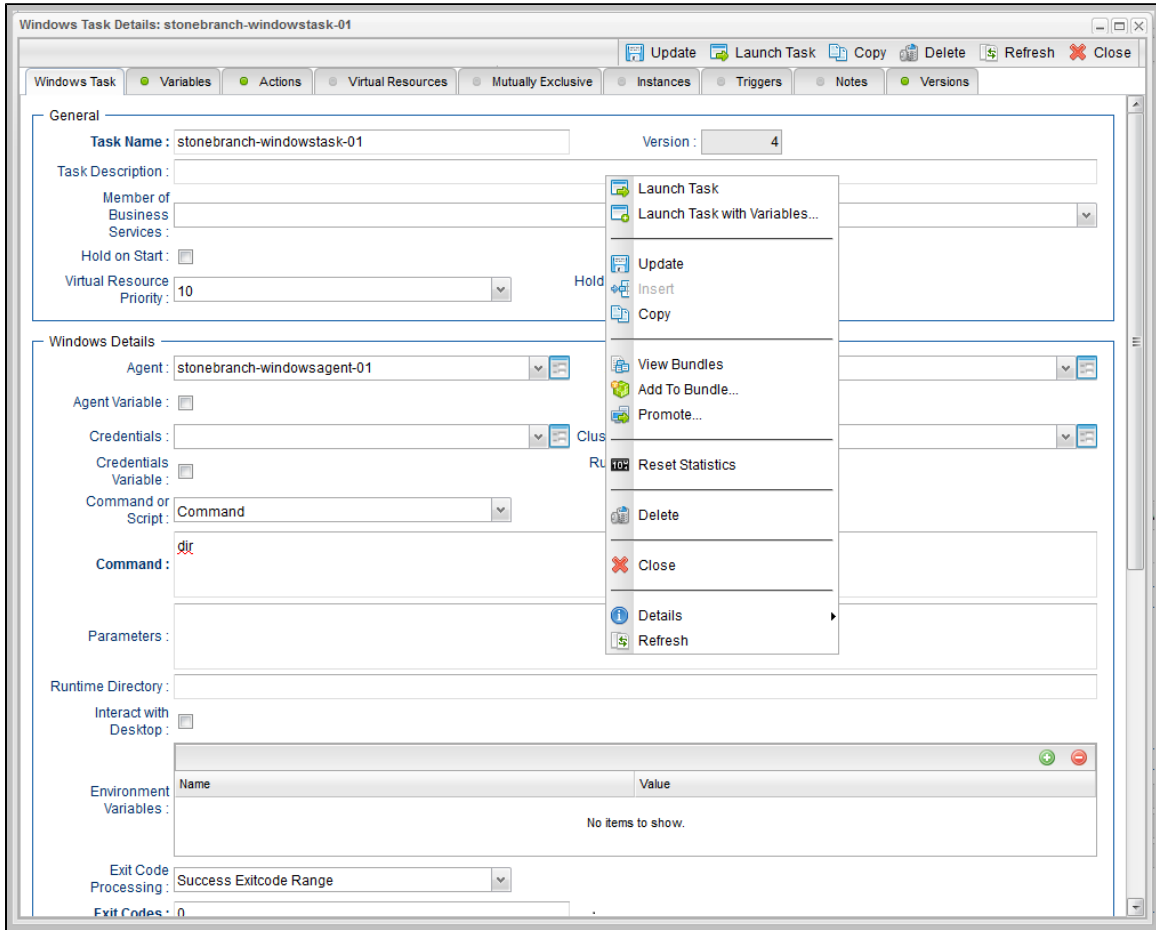
The Controller supports a Launch with Variables feature that allows you to quickly provide values for the variables specified in the task and launch it. All task types support the Launch with Variables feature.

(The following procedure assumes the task is already set up with variables where required.)

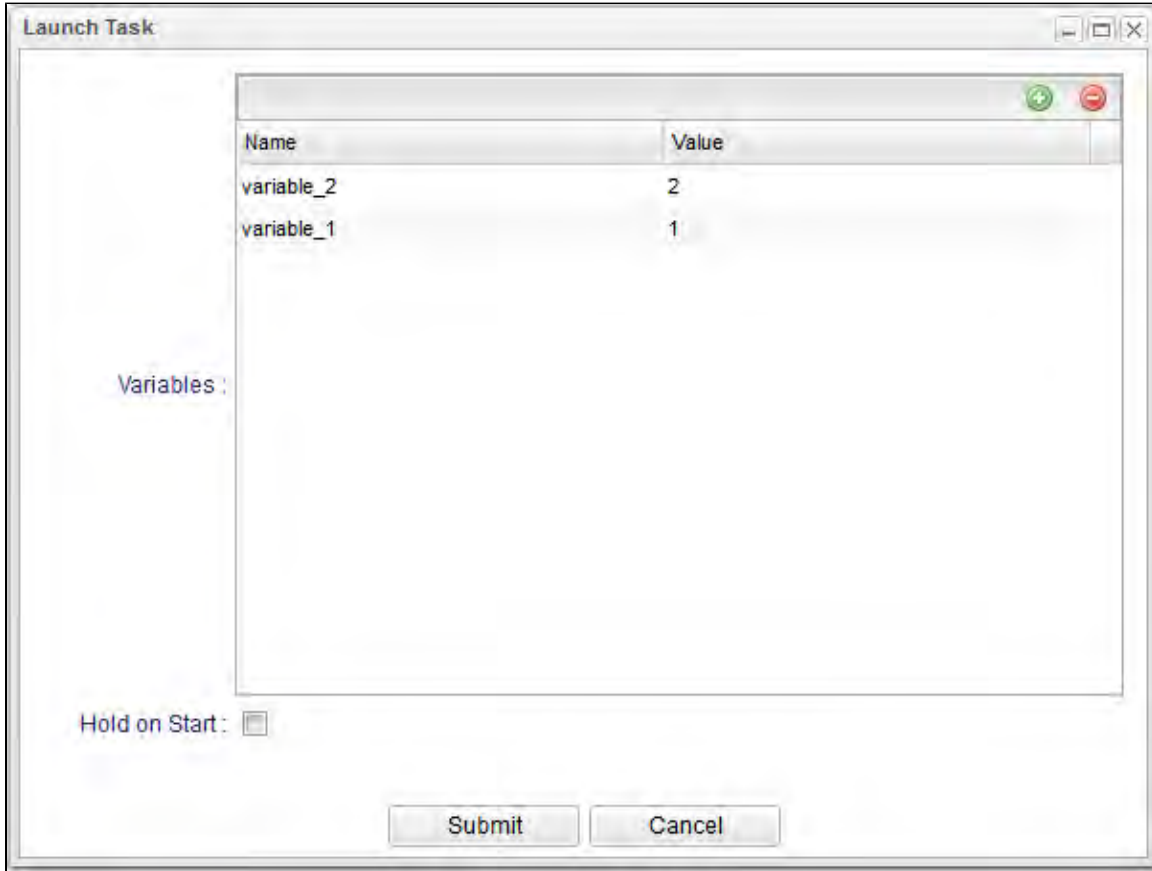
To launch a task using Launch with Variables:

**Step 1** Display the task you want to launch.

**Step 2** Access the Action menu.



**Step 3** Select **Launch Task with Variables**. The Task Variables pop-up dialog displays. Any variables attached to this task automatically are displayed in alphabetic order (a-z).



**Step 4** As needed, set the variable values or add new variables. The window allows you to specify up to six variable and value pairs.

**Step 5** If you want to put the task instance in **held** status when the task is started, select **Hold on Start**.

**Step 6** When you are finished, click **Submit**. The Controller populates the variables with the values you supplied and launches the task.

## Changing the Priority of a Task Instance

You can change the priority of a task instance so that it will run sooner or later, as described below.

The priority specified here is meaningful only in relation to the priority setting of other tasks sent to that Agent from the same Controller instance.

You can change the priority of a Windows, Linux/Unix, or z/OS task instance while it is in any of the following statuses: Started, Running, Queued.

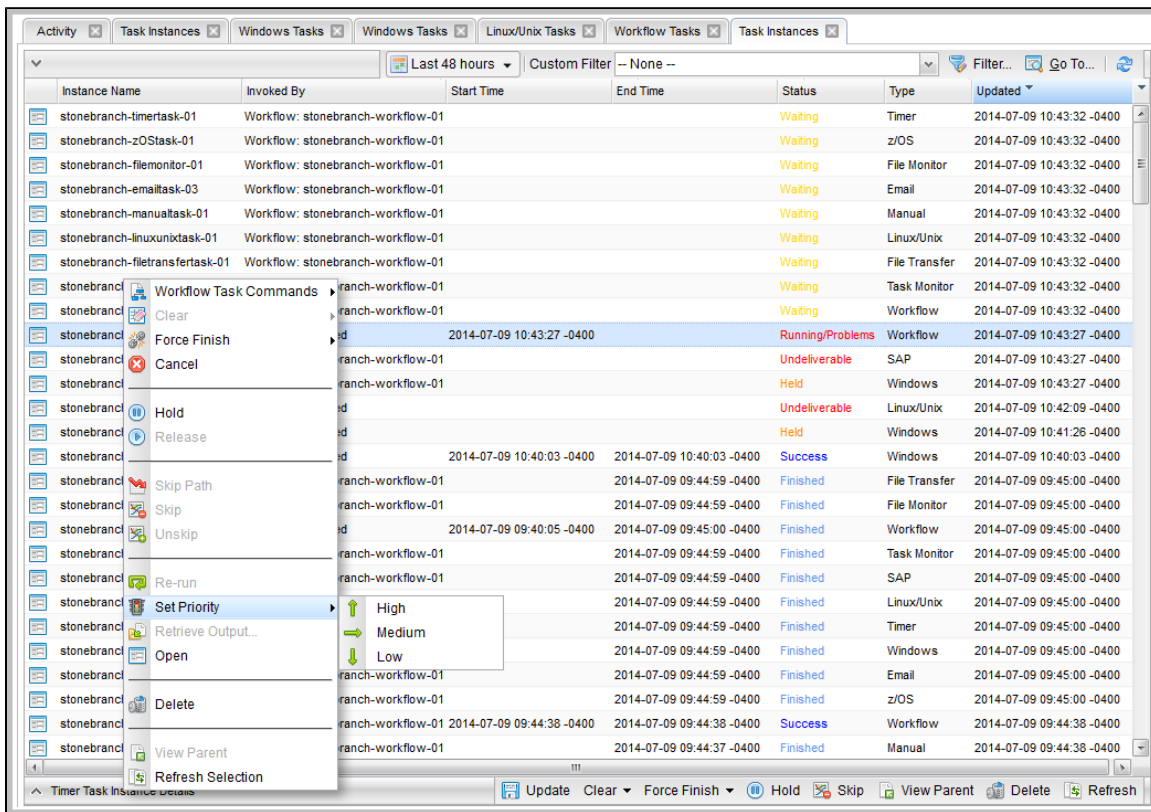
Two methods are available for changing the priority of a task instance:

- From the Activity Monitor or Task Instances list
- From the Workflow Monitor

### Set Priority on a Task Instance from the Activity Monitor or Task Instances List

**Step 1** Select the **task instance** for which you want to set the priority.

**Step 2** Right-click the task instance and, on the Action menu, select the priority level.



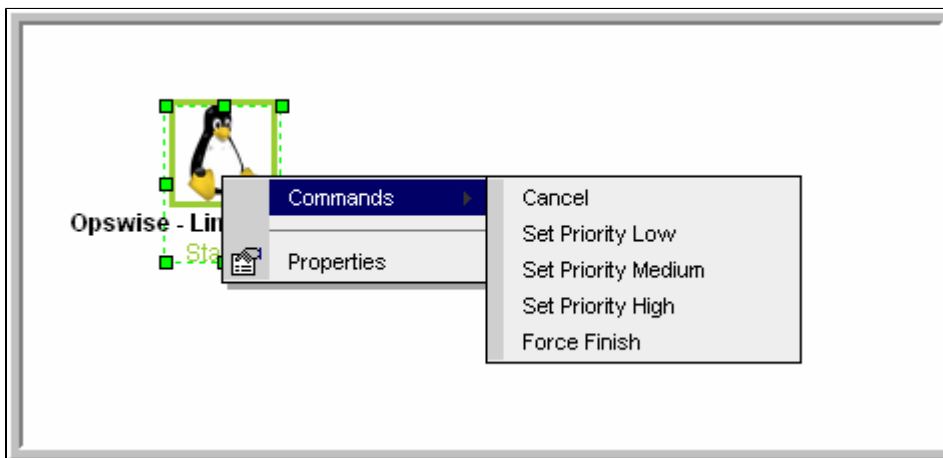
**Step 3** When the Set Priority command has been executed, the Controller displays the following message at the bottom of the list:  
**Command Set Priority <High/Medium/Low> successfully against task instance <name>.**

## Set Priority on a Task Instance from the Workflow Monitor

**Step 1** View the Workflow that contains the task instance for which you want to set the priority.

**Step 2** Select the task instance for which you want to set priority.

**Step 3** Select **Commands**.



**Step 4** Select a priority for the task instance.

## Re-running a Task Instance



If a task instance is part of a Workflow, you can re-run it as long as the Workflow has not completed.

If a task instance is not part of a Workflow, you can re-run it as long as it has not been manually purged from the Activity Monitor.

You can re-run a task instance while it is in any of the following statuses: Success, Start Failure, Failed, Cancelled, Finished.



#### Note

You cannot re-run a Workflow task instance.

When you re-run a task instance, the Controller uses the same task instance. That is, the new task instance has the same `sys_id`. However, you can view the two task instances distinctly on the [History list](#) (one for each time it ran).

Two methods are available for re-running a task instance:

- From the Activity Monitor or Task Instances list
- From the Workflow Monitor (if the task instance is running as part of a Workflow)

## Re-run a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the <a href="#">task instance</a> you want to re-run.
<b>Step 2</b>	Click <b>Re-run</b> . The task status changes to the next appropriate status as though it had just been launched.

## Re-run a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the Workflow that contains the task instance you want to re-run.
<b>Step 2</b>	Select the <a href="#">task instance</a> you want to re-run.
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Re-run</b> . The task status changes to the next appropriate status as though it had just been launched, and the Workflow Console opens to display information about the re-run.

## Cancelling a Task Instance

The Cancel command cancels a running task instance.

You can cancel a task instance while it is in any of the following statuses: Queued, Action Required, Started, Running.

For tasks that run on Agents, including Windows, Linux, Unix, z/OS, FTP, File Monitor, and Universal Command tasks, the Cancel command is sent to the Agent.

- If the task instance has not yet been launched, it does not launch.
- If the task instance already has been launched, the Agent cancels it, if possible.
- If the task instance is a Workflow, any of its task instances in Running status go to Cancelled status; the Workflow itself goes to Running/Problems status.
- If the task instance is in a Workflow, the Workflow goes to Running/Problems status. If the task is re-run, the Workflow returns to Running status.

Two methods are available for cancelling a task instance:

- From the Activity Monitor or Task Instances list
- From the Workflow Monitor (if the task instance is running as part of a Workflow)

## Cancel a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the <a href="#">task instance</a> you want to cancel.
<b>Step 2</b>	Click <b>Cancel</b> . The task status changes to Cancelled.

## Cancel a Task Instance from the Workflow Monitor

<b>Step 1</b>	Open the Workflow Monitor for the workflow that contains the task instance you want to cancel.
<b>Step 2</b>	Select the task instance.
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Cancel</b> . The task status changes to Cancelled and the Workflow Console opens to display information about the cancellation.

## Force Finishing a Task Instance

The Force Finish command puts a task instance into the Finished status, regardless of what the task instance is doing.

You can Force Finish a task instance while it is in any of the following statuses: Defined, Waiting, Held, Resource Wait, Queued, Action Required, Started, Running, Cancel Pending, In Doubt, Failure to Start, Cancelled, Failed.

One purpose of Force Finish is to allow successor task instances in a workflow to launch without waiting for the current task instance to complete. You also may want to Force Finish a stand-alone task instance; for example, you may want to mark a failed job as Finished, rather than rerunning the job.

If a task instance is running when the user issues a Force Finish, the Controller marks the task instance as Finished even though the actual process continues running. Two exceptions are the File Monitor and FTP File Monitor; for these task types, the monitoring processes are aborted by a Force Finish command. Assuming they have no other dependencies, all successor task instances waiting for successful completion of this task instance will start.

When you issue a Force Finish against a Workflow, the Workflow and any of its tasks that are not already in Success, Finished, or Skipped status will go to Finished status.

Two methods are available for Force Finishing a task instance:

- From the Activity Monitor or Task Instances list
- From the Workflow Monitor (if the task instance is running as part of a Workflow)

### Force Finish a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the task instance you want to Force Finish.
<b>Step 2</b>	Click <b>Force Finish</b> . The task status changes to Finished.

### Force Finish a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the workflow that contains the task instance you want to Force Finish.
<b>Step 2</b>	Select the task instance.
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Force Finish</b> . The task status changes to Finished and the Workflow Console opens to display information about the Force Finish.

## Force Finishing (Halt) a Task Instance

Just as with the [Force Finish](#) command, the Force Finish (Halt) command puts a task instance into the Finished status, regardless of what the task instance is doing.

However, Force Finish (Halt) prevents successor task instances in a Workflow from being run. Those tasks will not run until you re-run the task against which you had executed Force Finish (Halt).

You can Force Finish (Halt) a task instance while it is in any of the following statuses: Defined, Waiting, Held, Resource Wait, Queued, Action Required, Started, Running, Cancel Pending, In Doubt, Failure to Start, Cancelled, Failed.

If a task instance is running when the user issues a Force Finish (Halt), the Controller marks the task instance as Finished even though the actual process continues running. Two exceptions are the File Monitor and FTP File Monitor; for these task types, the monitoring processes are aborted by a Force Finish (Halt) command. All successor task instances waiting for successful completion of this task instance will remain in Waiting status.

Similarly, task monitors are not released if a Force Finish (Halt) is executed against a task being monitored.

**Note**

There are two areas in the user interface that you can check to determine if a task instance was forced finished with halt:

- [Additional Information](#) field in the [Audit Details](#) for that force finished task instance.
- [Status Description](#) field in the [Task Instance Details](#) for that force finished task instance.

Two methods are available for Force Finishing (Halt) a task instance:

- From the Activity Monitor
- From the Workflow Monitor (if the task instance is running as part of a Workflow)

## Force Finish (Halt) a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the task instance you want to Force Finish (Halt).
<b>Step 2</b>	Click <b>Force Finish (Halt)</b> . The task status changes to Finished.

## Force Finish (Halt) a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the workflow that contains the task instance you want to Force Finish (Halt).
<b>Step 2</b>	Select the task instance.
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Force Finish (Halt)</b> . The task status changes to Finished and the Workflow Console opens to display information about the Force Finish (Halt).

## Force Finish/Canceling a Task Instance

The Force Finish/Cancel command cancels a task instance and puts it into Finished status, regardless of what the task instance is doing.

You can Force Finish/Cancel a task instance while it is in any of the following statuses: Queued, Action Required, Started, Running.

One purpose of Force Finish/Cancel is to cancel a task instance and allow successor task instances in a Workflow to launch without waiting for that task instance to complete. You also may want to Force Finish/Cancel a stand-alone task instance; for example, you may want to mark a failed job as Finished, rather than rerunning the job.

**Note**

The Force Finish/Cancel command is not implemented for Timer tasks, since for this type of task, the Cancel and Force Finish commands essentially perform the same function.

For tasks that run on Agents, including Windows, Linux, Unix, z/OS, FTP, File Monitor, and Universal Command tasks, the Force Finish/Cancel command is sent to the Agent.

- If the task instance has not yet been launched, it does not launch.
- If a task instance is running when the user issues a Force Finish/Cancel command, the Agent cancels the task instance, if possible, and then the Controller marks the task instance as Finished; processing does not continue. Assuming they have no other dependencies, all successor task instances waiting for successful completion of this task instance will start.
- If the task instance is a workflow, any eligible task instances in the workflow are cancelled and set to the Finished status, and then the workflow itself is set to the Finished status.

Two methods are available for Force Finish/Canceling a task instance:

- From the Activity Monitor or Task Instances list
- From the Workflow Monitor (if the task instance is running as part of a Workflow)

## Force Finish/Cancel a Task Instance from the Activity Monitor

<b>Step 1</b>	Select the task instance you want to Force Finish/Cancel.
<b>Step 2</b>	Click <b>Force Finish/Cancel</b> . The task status changes to Finished.

## Force Finish/Cancel a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the workflow that contains the task instance you want to Force Finish/Cancel.
<b>Step 2</b>	Select the task instance.
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Force Finish/Cancel</b> . The task status changes to Finished and the Console opens to display information about the Force Finish/Cancel.

## Force Finish/Cancelling (Halt) a Task Instance

Just as with the [Force Finish/Cancel](#) command, the Force Finish/Cancel (Halt) command cancels a task instance and puts it into Finished status, regardless of what the task instance is doing.

However, Force Finish/Cancel (Halt) prevents successor task instances in a Workflow from being run. Those tasks will not run until you re-run the task against which you had executed Force Finish/Cancel (Halt).

Task monitors are not released if a Force Finish/Cancel (Halt) is executed against a task being monitored.

You can Force Finish/Cancel (Halt) a task instance while it is in any of the following statuses: Queued, Action Required, Started, Running.



### Note

The Force Finish/Cancel (Halt) command is not implemented for Timer tasks, since for this type of task, the Cancel and Force Finish commands essentially perform the same function.

For tasks that run on Agents, including Windows, Linux, Unix, z/OS, FTP, File Monitor, and Universal Command tasks, the Force Finish/Cancel (Halt) command is sent to the Agent.

- If the task instance has not yet been launched, it does not launch.
- If a task instance is running when the user issues a Force Finish/Cancel (Halt) command, the Agent cancels the task instance, if possible, and then the Controller marks the task instance as Finished; processing does not continue. All successor task instances waiting for successful completion of this task instance remain in Waiting status.
- If the task instance is a workflow, any eligible task instances in the workflow are cancelled and set to the Finished status, and then the workflow itself is set to the Finished status.



### Note

There are two areas in the user interface that you can check to determine if a task instance was forced finish / cancelled with halt:

- [Additional Information](#) field in the [Audit Details](#) for that force finish / cancelled task instance.
- [Status Description](#) field in the [Task Instance Details](#) for that force finish / cancelled task instance.

Two methods are available for Force Finish/Cancelling (Halt) a task instance:

- From the Activity Monitor
- From the Workflow Monitor (if the task instance is running as part of a Workflow)

## Force Finish/Cancel (Halt) a Task Instance from the Activity Monitor

<b>Step 1</b>	Select the task instance you want to Force Finish/Cancel (Halt).
<b>Step 2</b>	Click <b>Force Finish/Cancel (Halt)</b> . The task status changes to Finished.

## Force Finish/Cancel (Halt) a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the workflow that contains the task instance you want to Force Finish/Cancel (Halt).
<b>Step 2</b>	Select the task instance.
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Force Finish/Cancel (Halt)</b> . The task status changes to Finished and the Console opens to display information about the Force Finish/Cancel (Halt).

## Putting a Task Instance on Hold

If you put a Workflow on hold that has not yet started, the Workflow and all the task instances in it are put on hold.

If you put a Workflow on hold when it is in Running status, all the task instances within the Workflow that have not yet started are put on hold; however, the Workflow itself does not go to Hold status because it already has started.

To release the Workflow and all of its task instances that are on hold, issue the Release Recursive command against the Workflow.

To release the Workflow but keep the task instances on hold until you release them one by one, use Release on the Workflow first, then use Release on each task instance.

You can put a task instance on hold while it is in any of the following statuses: Defined, Waiting, Resource Wait, Queued.

Two methods are available for putting a task instance on hold:

- From the Activity Monitor or Task Instances list
- From the Workflow Monitor (if the task instance is running as part of a Workflow)

## Hold a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the task instance you want to put on hold.
<b>Step 2</b>	Click <b>Hold</b> . The task status changes to Held.

## Hold a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the workflow that contains the task instance you want to put on hold.
<b>Step 2</b>	Select the task instance.
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Hold</b> . The task status changes to Held and the Workflow Console opens to display information about the hold.

## Releasing a Task Instance from Hold

For Workflows, if the user held a Workflow that already was running, only the task instances within the Workflow that had not started yet are put into Held status. In this case, the Workflow itself does not go to Held status.

You can release a non-Workflow task instance from hold from the Activity Monitor or Task Instances list while it is in the following status: Held.

To release the Workflow, use one of the following commands:

- To release the entire held Workflow and its task instances, use **Release Recursive**.
- To release a Workflow that is not in Held status but has task instances that are in Held status, use **Release Recursive**. In this case, you can issue **Release Recursive** on a Workflow in any of the following statuses: Defined, Waiting, Held, Resource Wait, Running.
- To release the Workflow but keep the task instances inside on hold so that you can release them one by one, use **Release**. In this case, release the Workflow first, then release each task instance manually.

Two methods are available for releasing a task instance from hold:

- From the Activity Monitor or Task Instances list
- From the Workflow Monitor (if the task instance is running as part of a Workflow)

## Release a Held Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the task instance you want to release from hold.
<b>Step 2</b>	Click <b>Release</b> or <b>Release Recursive</b> . The task status changes to the next appropriate status according to where it was in processing at the time it was put on hold.

## Release a Held Task Instance from the Workflow Monitor

<b>Step 1</b>	View the Workflow that contains the task instance you want to release.
<b>Step 2</b>	Select the task instance.
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Release</b> . The task status changes to the next appropriate status according to where it was in processing, and the Workflow Console opens to display information about the release.

## Skipping a Task Instance

You also can skip a task instance or a task instance path so that the task instance and all of its dependent task instances automatically are skipped as well.

You can skip any task instance as long as it has not yet started running; that is, while it is in any of the following statuses: Defined, Waiting, Held, Resource Requested, Resource Wait.

Two methods are available for skipping a task instance:

- From the Activity Monitor or Task Instances list
- From the Workflow Monitor (if the task instance is running as part of a Workflow)



### Note

You also can specify that a task instance will be skipped (before the task or its Workflow is launched) by:

1. Modifying a trigger Details (using the trigger's Skip Count field) so that the Controller skips the next N number of trigger occurrences for launching the task.
2. Modifying a Workflow Details by specifying [conditional paths](#) that may place one or more task instances in the Skipped status when the workflow is run.
3. Modifying a Workflow Details by specifying that one or more task instances should be skipped (or run) at specific times (see [Adding Skip/Run Criteria for Specific Tasks](#)).

If you skip a Workflow task instance, all the task instances within the Workflow also are skipped, along with any nested Workflows.

Once a task instance has been skipped, the only command you can run against it is [Unskip](#).

## Skip a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the task instance you want to skip.
<b>Step 2</b>	Click <b>Skip</b> . The task status changes to Skipped.
<b>Step 3</b>	To skip the task instance and all of its dependent task instances, click <b>Skip Path</b> . The task status of the task instance and all of its dependent task instances changes to Skipped.

## Skip a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the Workflow that contains the task instance you want to skip.
<b>Step 2</b>	Select the task instance.
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Skip</b> . The task status changes to Skipped, and the Console opens to display information about the skip.

<b>Step 5</b>	To skip the task instance and all of its dependent task instances, click <b>Skip Path</b> . The task status of the task instance and all of its dependent task instances changes to Skipped, and the Console opens to display information about the skip.
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## Showing or Hiding Skipped Task Instances

You can select whether to show or hide skipped task instances on the Workflow Monitor either:

- Before the Workflow is running
- While the Workflow is running

Three methods are available for selecting whether or not to show or hide skipped task instances:

- From the Workflow Task Details
- From the Workflow Task Instance Details
- From the Workflow Monitor

### Setting Show / Hide Skipped Tasks from the Workflow Task Details

<b>Step 1</b>	Display the Workflow Task Details for the Workflow that you want to show/hide Skipped task instances.
<b>Step 2</b>	Use the Show / Hide Skipped Tasks field to select whether you want to show or hide skipped task instances (default is Show Skipped). When viewing a running Workflow in the Workflow Monitor, the skipped task instances will be shown or hidden based on your selection.

### Setting Show / Hide Skipped Tasks from the Workflow Task Instance Details

<b>Step 1</b>	Display the Workflow Task Instance Details for the Workflow task instance that you want to show/hide Skipped task instances.
<b>Step 2</b>	Use the Show / Hide Skipped Tasks field to select whether you want to show or hide skipped task instances (default is Show Skipped). When viewing the Workflow instance in the Workflow Monitor, the skipped task instances will be shown or hidden based on your selection.

### Setting Show / Hide Skipped Tasks from the Workflow Monitor

Open the Workflow task instance in the Workflow Monitor. By default, the Workflow Monitor will show or hide skipped task instances based on the Workflow task instance's Show / Hide Skipped Tasks option.

To temporarily change the behavior, right-click in the Workflow Monitor canvas and select either of the following entries from the pop-up menu:

- Show Skipped / Restore
- Hide Skipped

## Unskipping a Task Instance

If a task instance in a Workflow has been skipped (perhaps at trigger time due to run criteria or manually by running the skip command), you can unskip that task instance while the Workflow is running.



#### Note

If you unskip a task instance that was skipped by issuing a Skip Path command against it, which automatically skip all of its dependent tasks, those dependent tasks stay in Skipped status. You must manually unskip each task to remove them from Skipped status.

Two methods are available for unskipping a task instance:

1. From the Activity Monitor or Task Instances list
2. From the Workflow Monitor

### Unskip a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the task instance you want to unskip.
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<b>Step 2</b>	Click <b>Unskip</b> . The task instance will run when all of its dependencies have been satisfied.
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## Unskip a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the Workflow that contains the task instance(s) you want to unskip.
<b>Step 2</b>	Select a <a href="#">task instance</a> . (You can issue commands only against one task at a time within the Workflow Monitor.)
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Unskip</b> . A confirmation message will appear in the Console, and the task instance will run when all of its dependencies have been satisfied.

## Marking a Dependency as Satisfied

For task instances running inside of a Workflow, you can mark a single predecessor dependency as satisfied to allow the task instance to run.

Marking a dependency as satisfied has the same result as [clearing a dependency](#).

You can mark a dependency as satisfied on task instances in the following status: Defined, Waiting, Held.

One method is available for marking a dependency as satisfied:

- From the Workflow Monitor

## Marking a Dependency as Satisfied from the Workflow Monitor

<b>Step 1</b>	View the Workflow that contains the task instance whose dependencies you want to satisfy.
<b>Step 2</b>	Locate and right-click on the task dependency (the connector line between two tasks).
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Mark as Satisfied</b> . If all other dependencies are satisfied, the task instance is launched normally.

## Clearing Predecessor Dependencies of a Task Instance

For a task instance running inside of a Workflow, you can clear all predecessor dependencies to allow that task instance to run. Clearing a predecessor dependency has the same result as [satisfying a predecessor dependency](#).

You can clear predecessor dependencies of a task instance while it is in any of the following statuses: Defined, Waiting, Held.



### Note

Clearing predecessor dependencies does not include the clearing of resource and mutually exclusive dependencies. To clear these dependencies, see [Clearing Resource Dependencies of a Task Instance](#) and [Clearing Mutually Exclusive Dependencies of a Task Instance](#), below. To clear all dependencies, see [Clearing All Dependencies of a Task Instance](#), below.

One method is available for clearing predecessor dependencies of a task instance:

- From the Workflow Monitor

## Clearing Predecessor Dependencies of a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the Workflow that contains the task instance whose predecessor dependencies you want to satisfy.
<b>Step 2</b>	Select the <a href="#">task instance</a> for which you want to clear predecessor dependencies.
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Clear Predecessors</b> . The task instance is launched normally.



## Clearing Resource Dependencies of a Task Instance

For task instances for which resources have been defined, you can clear those resource dependencies.

You can clear resource dependencies of task instances while it is in the following status: Resource Wait.

Two methods are available for clearing resource dependencies from task instances:

1. From the Activity Monitor or Task Instances list
2. From the Workflow Monitor

### Clear Resource Dependencies of a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the <a href="#">task instance</a> whose resources you want to clear.
<b>Step 2</b>	Click <b>Clear Resources</b> . Resource dependencies are cleared from the task instance.

### Clear Resource Dependencies of a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the Workflow that contains the task instance(s) you want to clear of resource dependencies.
<b>Step 2</b>	Select a <a href="#">task instance</a> . (You can issue commands only against one task at a time within the Workflow Monitor.)
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Clear Resources</b> . A confirmation message will appear in the Console, and the task instance will run without resources.

## Clearing Mutually Exclusive Dependencies of a Task Instance

For task instances that are mutually exclusive with other task instances, you can clear those mutually exclusive dependencies.

Any task instances that were mutually exclusive with this task instance will no longer be mutually exclusive.

You can clear mutually exclusive dependencies of a task instance while it is in the following status: Exclusive Wait.

Two methods are available for clearing mutually exclusive dependencies from task instances:

1. From the Activity Monitor or Task Instances list
2. From the Workflow Monitor

### Clear Mutually Exclusive Dependencies of a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the <a href="#">task instance</a> whose mutually exclusive dependencies you want to clear.
<b>Step 2</b>	Click <b>Clear Exclusive</b> . Mutually exclusive dependencies of the task instance are cleared, and the task instance is launched normally.

### Clear Mutually Exclusive Dependencies of a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the Workflow that contains the task instance you want to clear of mutually exclusive dependencies.
<b>Step 2</b>	Select a <a href="#">task instance</a> . (You can issue commands only against one task at a time within the Workflow Monitor.)
<b>Step 3</b>	Select <b>Commands</b> .
<b>Step 4</b>	Select <b>Clear Exclusive</b> . A confirmation message will appear in the Console, and the task instance will run normally.

## Clearing All Dependencies of a Task Instance

You can clear all dependencies (predecessors, resources, and exclusive) to allow a task instance to run.

You can clear all dependencies of a task instance while it is in any the following status: Defined, Waiting, Held, Exclusive Requested, Exclusive Wait, Resource Requested, Resource Wait.

Three methods are available for clearing all dependencies of a task instance:

1. From the Activity Monitor or Task Instances list
2. From the Workflow Monitor (for a task instance within the Workflow)
3. From the Workflow Monitor (for the Workflow itself)

If you issue a Clear All Dependencies command against a Workflow task instance, all dependencies of only the Workflow task instance are cleared, not the dependencies of any of its task instances.

## Clear All Dependencies of a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the <a href="#">task instance</a> whose dependencies you want to clear.
<b>Step 2</b>	Click <b>Clear All Dependencies</b> . All dependencies are cleared from the task instance and it is launched normally.

## Clear All Dependencies of a Task Instance within a Workflow from the Workflow Monitor

<b>Step 1</b>	View the Workflow that contains the task instance whose dependencies you want to clear.
<b>Step 2</b>	Select the <a href="#">task instance</a> for which you want to clear predecessor dependencies.
<b>Step 3</b>	Select <b>Commands &gt; Clear All Dependencies</b> . All dependencies are cleared from the task instance and it is launched normally.

## Clear All Dependencies of a Workflow Task Instance from the Workflow Monitor

<b>Step 1</b>	View the Workflow whose dependencies you want to clear.
<b>Step 2</b>	Right-click the Workflow Monitor canvas to display a menu of available actions.
<b>Step 3</b>	Select <b>Commands &gt; Clear All Dependencies</b> . All dependencies are cleared from the Workflow.

## Clearing Time Wait/Delay Specifications of a Task Instance

You can clear all Wait To Start and Delay On Start specifications of a task instance to allow a task instance to run without waiting.

You can clear all Wait To Start and Delay On Start specifications of a task instance while it is in any the following status: Defined, Waiting, Time Wait, Held.

Three methods are available for clearing Time Wait/Delay specifications of task instances:

1. From the Activity Monitor or Task Instances list
2. From the Workflow Monitor
3. From the task instance Details

## Clear All Time Wait/Delay Specifications of a Task Instance from the Activity Monitor or Task Instances List

<b>Step 1</b>	Select the <a href="#">task instance</a> whose Time Wait/Delay specifications you want to clear.
<b>Step 2</b>	Click <b>Clear Time Wait/Delay</b> . The task instance is launched normally.

## Clear All Time Wait/Delay Specifications of a Task Instance from the Workflow Monitor

<b>Step 1</b>	View the Workflow that contains the task instance whose Time Wait/Delay specifications you want to clear.
<b>Step 2</b>	Select the <a href="#">task instance</a> for which you want to clear Time Wait/Delay specifications.
<b>Step 3</b>	Select <b>Commands</b> .

<b>Step 4</b>	Select <b>Clear Time Wait/Delay</b> . The task instance is launched normally.
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## **Clear All Time Wait/Delay Specifications of a Task Instance from the Task Instance Details**

<b>Step 1</b>	Open the Task Instance Details for the task instance that you want to clear Time Wait/Delay specifications.
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<b>Step 2</b>	Right-click in the task instance Details and select Clear > Clear Time Wait/Delay.
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## Creating and Maintaining Workflows

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  - Viewing Detailed Status of Predecessors / Successors of a Single Task Instance from Workflow Monitor
  - Viewing Predecessors/Successors of All Tasks in a Workflow Task
  - Viewing Predecessors/Successors of All Task Instances in a Workflow Task Instance
- Forecasting a Workflow for a Specific Date/Time
- Modifying Tasks in a Workflow

### Overview

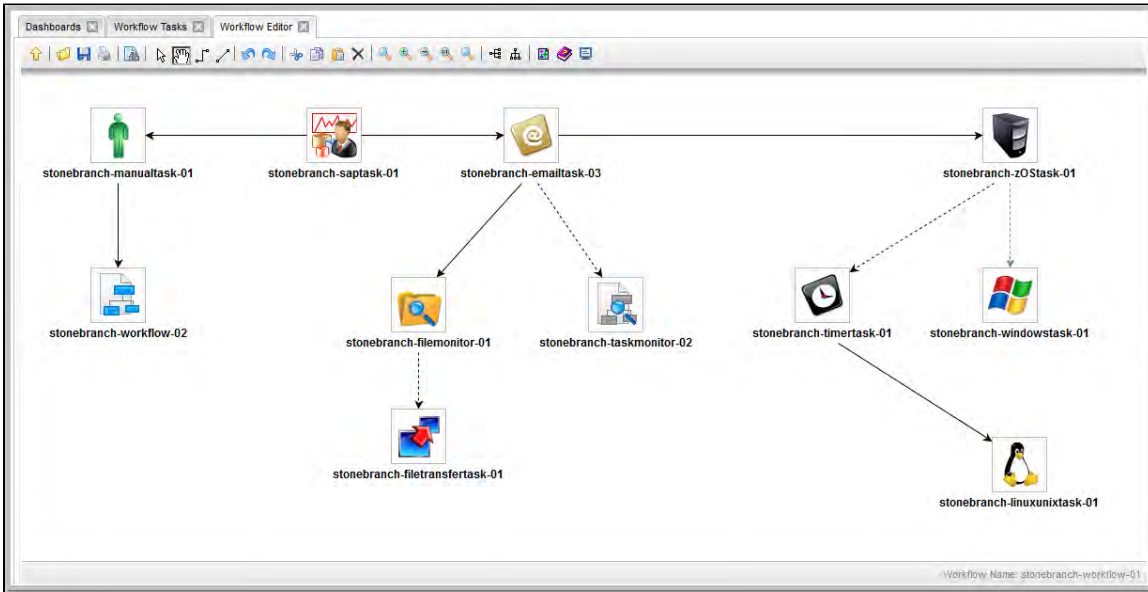
A Workflow is a task comprised of one or more tasks of one or more [task types](#), including other Workflows.

To create a Workflow, you enter [task Details](#) just as you would for any task, and then design the Workflow on the [Workflow Editor](#), where you add, connect, and organize the tasks that will comprise the Workflow.

During and after a Workflow run, you can view detailed results of the run in the [Workflow Task Instance Details](#), and monitor the status of the Workflow on the [Workflow Monitor](#).

Although a typical Workflow is a single group of tasks, a Workflow can contain multiple groups of tasks and/or individual tasks. Each task in a group of tasks is connected to one or more other tasks in that group. Each connection is made from one task (the predecessor) to another task (the successor). There is no limit to the number of connections that can be made to or from a task.

The following sample Workflow contains a single group of tasks.



When you launch a Workflow, the first predecessor task in all task groups, and all individual tasks, begin to run. In this example, task **stonebranch-saptask-01** would begin to run.

## Built-In Variables

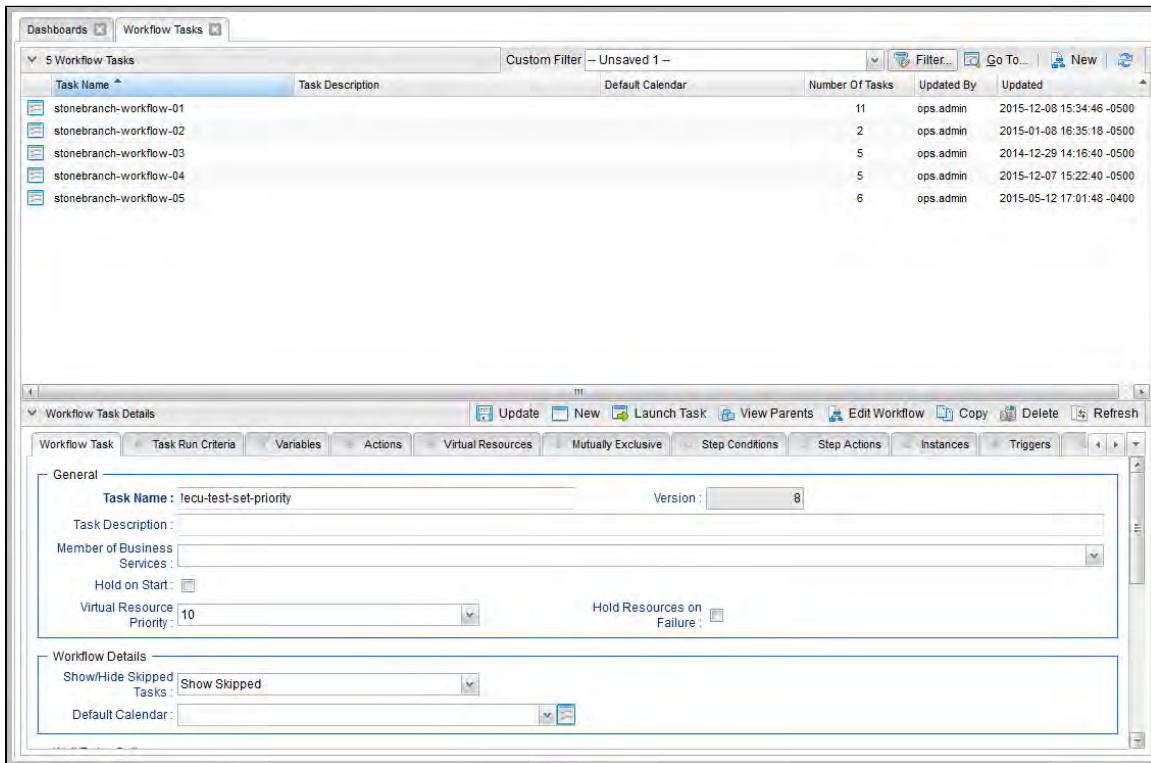
The following built-in variables can be used in a Workflow task to pass data where appropriate:

- Task Instance variables

## Creating a Workflow Task

**Step 1** From the [Automation Center](#) navigation pane, select **Tasks > Workflow Tasks**. The Workflow Tasks list displays a list of all currently defined Workflow tasks.

Below the list, Workflow Task Details for a new Workflow task displays.



**Step 2** Enter/select Details for a new Workflow task, using the field descriptions below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can either:

- Use the scroll bar.
- Temporarily [hide the list](#) above the Details.
- Click the **New** button above the list to display a pop-up version of the Details.

**Step 3** Click the **Save** button. The Workflow task is added to the database, and all buttons and tabs in Workflow Task Details are enabled.

**Step 4** Click the **Edit Workflow** button to display a blank Workflow Editor canvas.

**Step 5** Follow the instructions provided below for [designing the Workflow](#) in the Workflow Editor.



**Note**

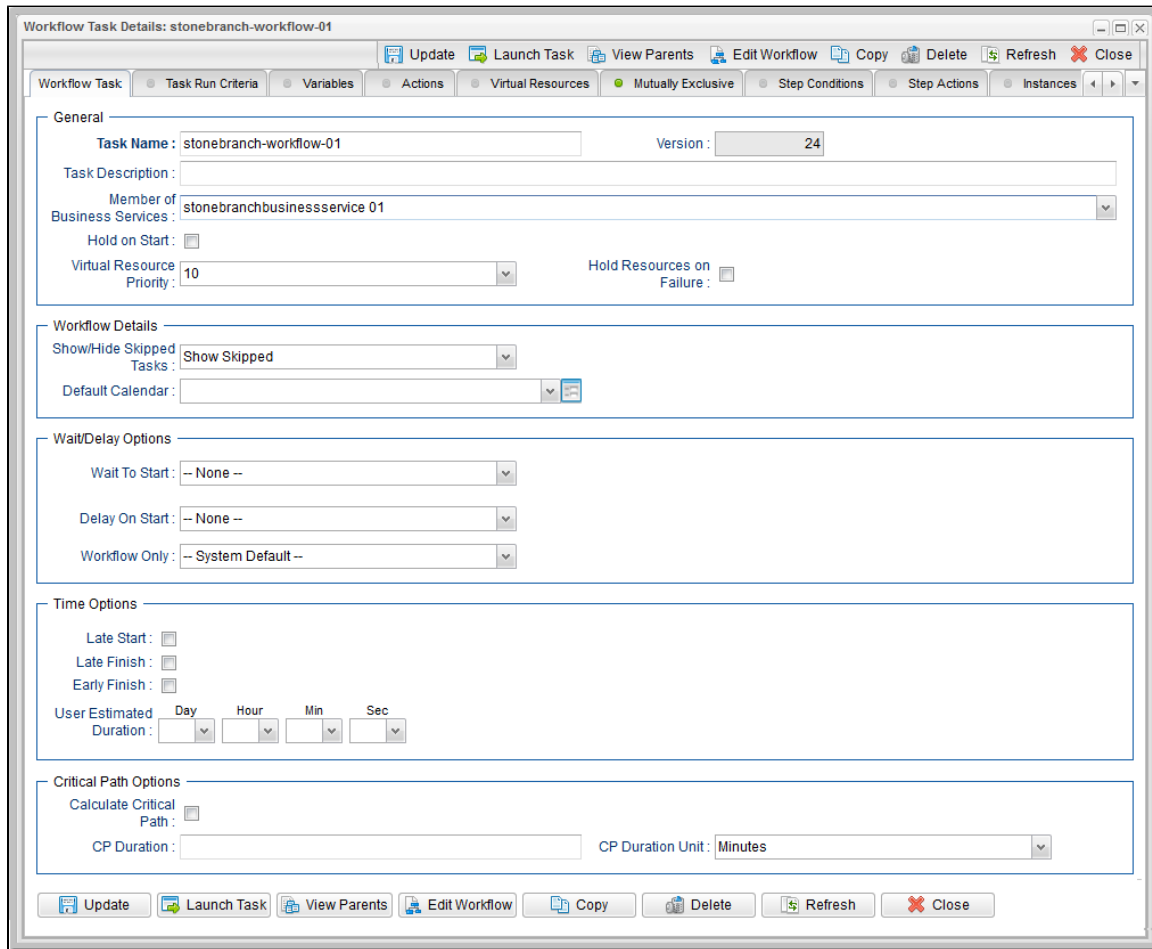
To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

## Workflow Task Details

The following Workflow Task Details is for an existing Workflow task.

Depending on the values that you enter / select for these fields, and whether or not the Workflow task has ever been launched, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Workflow Task Details.




For information on how to access additional details - such as [Metadata](#) and complete [database Details](#) - for Workflows (or any type of record), see [Records](#).

## Workflow Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Workflow Task Details.



Field Name	Description
<b>General</b>	This section contains general information about the Workflow task.
Task Name	User-defined name of this task, containing a maximum 255 alphanumeric characters; <a href="#">variables</a> supported. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the <a href="#">Versions</a> tab to view previous versions. For details, see <a href="#">Record Versioning</a> .
Task Description	User-defined; description of this record. (Maximum = 200 characters.)

Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of <b>Held</b> . The task runs when the user <a href="#">releases</a> it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;">  <b>Note</b>                      Enabling this field will have no effect on Workflows; they cannot go to Failed status.                 </div>
<b>Workflow Details</b>	This section contains assorted detailed information about the Workflow task.
Show/Hide Skipped Tasks	Specification to either show or hide tasks that have been skipped in a Workflow (see <a href="#">Skipping a Task</a> ).  Options:  <ul style="list-style-type: none"> <li>• <b>Show Skipped</b></li> <li>• <b>Hide Skipped</b></li> </ul>
Auto Layout	If <a href="#">Show/Hide Skipped Tasks</a> = <b>Hide Skipped</b> ; specification for the layout of the Workflow Monitor.  Options:  <ul style="list-style-type: none"> <li>• <b>-- None --</b></li> <li>• <b>Horizontal Layout</b></li> <li>• <b>Vertical Layout</b></li> </ul>
Default Calendar	Default <a href="#">calendar</a> used by the Workflow. If the Workflow is launched by a trigger, the trigger calendar overrides this default calendar.
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched.  Options are:  <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>



Wait Time	If <b>Wait To Start</b> = Time; Number of hours and minutes to wait before starting the task.
Wait Duration	If <b>Wait To Start</b> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <b>Wait To Start</b> = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.  Options are: <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <b>Delay On Start</b> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <b>Delay On Start</b> = Seconds; Number of seconds to delay after starting the task.
Workflow Only	Specification for whether or not to apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.  Options are: <ul style="list-style-type: none"> <li>• -- System Default -- Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications as defined by the <b>System Default Wait/Delay Workflow Only</b> system property. (Default is <b>yes</b>.)</li> <li>• Yes Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications only if the task is in a Workflow.</li> <li>• No Apply the <b>Wait To Start</b> and <b>Delay On Start</b> specifications whether or not the task is in a Workflow.</li> </ul>
<b>Time Options</b>	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <b>Late Start Type</b> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <b>Started Late</b> field; the field is checked if the instance started after the specified time. The <b>Started Late</b> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if <b>Late Start</b> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <b>start time</b>.</li> </ul>
Late Start Time	If <b>Late Start Type</b> = Time; Time after which the task <b>start time</b> is considered late. Use HH:MM, 24-hour time.

Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Late Finish	<p>If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a>). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.</p>
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Late Finish Time	<p>If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.</p>
Late Finish Duration	<p>If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.</p>
Early Finish	<p>If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a>). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.</p>
Early Finish Type	<p>Required if <a href="#">Early Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	<p>If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.</p>
Early Finish Duration	<p>If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.</p>
User Estimated Duration	<p>Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the <a href="#">User Estimated End Time</a> on a task instance record.</p>
<b>Critical Path Options</b>	<p>This section contains Critical Path-related specifications for the task.</p>

<p>Calculate Critical Path</p>	<p>If enabled (checked), the Controller calculates the Critical Path of this Workflow and, by default, displays it in the Workflow Monitor. You can toggle between the normal view and the Critical Path view by using the <a href="#">Toggle Critical Path View</a> icon on the <a href="#">Workflow Monitor toolbar</a>.</p> <p>If disabled (unchecked), the Controller does not calculate the Critical Path of this Workflow and display it in the Workflow Monitor, and the <a href="#">Toggle Critical Path View</a> icon on the <a href="#">Workflow Monitor toolbar</a> is disabled.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> This field displays only if the <a href="#">Critical Path Calculations Permitted</a> Universal Controller system property is set to <b>true</b>.</p> </div> <div style="background-color: #ffe6e6; padding: 10px; margin: 10px 0;"> <p> <b>Important</b></p> <ul style="list-style-type: none"> <li>When restoring a Workflow Details <a href="#">Version</a>, the Calculate Critical Path setting (enabled or disabled) will be preserved.</li> <li>When <a href="#">promoting</a> a Workflow record or importing (<a href="#">list</a> or <a href="#">bulk</a>) Workflow Details:                             <ul style="list-style-type: none"> <li><a href="#">Critical Path Calculations Permitted</a> setting will not change.</li> <li><b>Calculate Critical Path</b>, if enabled, will be disabled.</li> </ul> </li> <li>If the database is "dropped" for any reason:                             <ul style="list-style-type: none"> <li><a href="#">Critical Path Calculations Permitted</a> will be set to <b>false</b>.</li> <li><b>Calculate Critical Path</b>, if enabled, will be disabled.</li> </ul> </li> </ul> </div>
<p>CP Duration</p>	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
<p>CP Duration (Resolved)</p>	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
<p>CP Duration Unit</p>	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>Seconds</li> <li>Minutes</li> <li>Hours</li> </ul> <p>Default is Minutes.</p>
<p><b>Statistics</b></p>	<p>This section contains time-related statistics for task instances of the task.</p>
<p>First Time Ran</p>	<p>System-supplied; date and time this task first ran.</p>
<p>Last Time Ran</p>	<p>System-supplied; date and time the task last ran.</p>
<p>Last Instance Duration</p>	<p>System-supplied; amount of time the task took to run the last time it ran.</p>

<b>Lowest Instance Time</b>	System-supplied; shortest amount of time this task has taken to run.
<b>Average Instance Time</b>	System-supplied; average amount of time this task takes to run.
<b>Highest Instance Time</b>	System-supplied; longest amount of time this task has taken to run.
<b>Number of Instances</b>	System-supplied; number of instances in the database for this task.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Workflow Task Details that let you perform various actions.
<b>Save</b>	Saves a new task record in the Controller database.
<b>New</b>	Displays empty (except for default values) Details for creating a new task.
<b>Update</b>	Saves updates to the record.
<b>View Parents</b>	Displays a list of any parent Workflow tasks for this task.
<b>Launch</b>	Manually launches this task.
<b>Edit Workflow</b>	Displays the <a href="#">Workflow Editor</a> for this task.
<b>Copy</b>	Creates a copy of this Workflow task, which you are prompted to rename.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	In pop-up view only; closes the pop-up view of this task.
<b>Tabs</b>	This section identifies the tabs across the top of the Workflow Task Details that provide access to additional information about the task.
<b>Workflow Task</b>	Displays details about this Workflow task.
<b>Task Run Criteria</b>	Workflows only. Allows you to specify <a href="#">skip and run criteria</a> for specific tasks in the workflow.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.

<b>Actions</b>	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> <li>• Task instance status</li> <li>• Exit codes</li> <li>• Late start</li> <li>• Late finish</li> <li>• Early finish</li> </ul> <p>Actions are:</p> <table border="1"> <tr> <td><b>Abort Action</b></td> <td>Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a>.</td> </tr> <tr> <td><b>Email Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a>.</td> </tr> <tr> <td><b>Set Variable</b></td> <td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a>.</td> </tr> <tr> <td><b>SNMP Notification</b></td> <td>Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a>.</td> </tr> <tr> <td><b>System Operation</b></td> <td>Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a>.</td> </tr> </table>	<b>Abort Action</b>	Abort the task if certain events occur. For details, see <a href="#">Abort Actions</a> .	<b>Email Notification</b>	Send an email if certain events occur. For details, see <a href="#">Email Notification Actions</a> .	<b>Set Variable</b>	Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see <a href="#">Creating a Set Variable Action within a Task or Workflow</a> .	<b>SNMP Notification</b>	Send an email if certain events occur. For details, see <a href="#">SNMP Notification Actions</a> .	<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .
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<b>System Operation</b>	Run an Universal Controller system operation based on specified conditions. For details, see <a href="#">System Operation Actions</a> .										
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.										
<b>Mutually Exclusive</b>	Lists all tasks that have been set to be <a href="#">mutually exclusive</a> of this task.										
<b>Step Conditions</b>	Lists all <a href="#">step conditions</a> defined for this task.										
<b>Step Actions</b>	Lists all <a href="#">step actions</a> created for this task.										
<b>Instances</b>	Lists all instances of this Workflow.										
<b>Triggers</b>	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see <a href="#">Triggers</a> .										
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.										
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .										

## Viewing a Workflow Task Instance

When a Workflow task is launched, the Controller creates a task instance record of that Workflow (and task instance records of all tasks in that Workflow).

A task instance contains detailed information about a single execution of that task.

You can access a Workflow task instance from:

- **Instances tab** on the [Workflow Task Details](#) for that task
- [Activity Monitor](#)

- Task Instances list


## Workflow Task Instance Details

The following Workflow Task Instance Details contains information on the execution of the Workflow shown in the [Workflow Task Details](#).

## Workflow Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Workflow Task Instance Details.

Field Name	Description
<b>General</b>	This section contains general information about the task instance.
Instance Name	Name of this task instance.



Reference Id	System-supplied; the Controller increments this number each time the task is run.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Invoked by	System-supplied; how the task instance was launched.  Options: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) Instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) Instance was launched by the named workflow.</li> <li>• Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the <a href="#">Task Instances</a> screen or, on most task instance screens, the <a href="#">Execution User</a> field.</li> </ul>
Task Description	User-defined; description of this record. (Maximum = 200 characters.)
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Execution User	System-supplied; if the task was launched manually, the ID of the user who launched it.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task.  Options: 1 (high) - 20 (low).  Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.  <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;">  <b>Note</b> Enabling this field will have no effect on Workflows; they cannot go to Failed status.                 </div>
Progress	Number of tasks in the Workflow that are in Success, Skipped, or Finished status / Total number of tasks in the Workflow.
<b>Status</b>	This section contains information about the current status of the task instance.
Status	System-supplied; see <a href="#">Task Instance Statuses</a> .
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Critical	Indicates that this task is in the Critical Path of a workflow.

Wait Until Time	Amount of time calculated to wait before the task was started, based on <a href="#">Wait To Start</a> and <a href="#">Delay On Start</a> times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
<b>Workflow Details</b>	This section contains assorted detailed information about the task instance.
Show/Hide Skipped Tasks	Specification to either show or hide tasks that have been skipped in a Workflow (see <a href="#">Skipping a Task</a> ).  Options: <ul style="list-style-type: none"> <li>• <b>Show Skipped</b></li> <li>• <b>Hide Skipped</b></li> </ul>
<b>Wait / Delay Options</b>	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched.  Options are: <ul style="list-style-type: none"> <li>• – None –</li> <li>• Time</li> <li>• Relative Time</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Wait Time	If <a href="#">Wait To Start</a> = Time; Number of hours and minutes to wait before starting the task.
Wait Duration	If <a href="#">Wait To Start</a> = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If <a href="#">Wait To Start</a> = Seconds; Number of seconds to wait before starting the task.



Delay On Start	<p>Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• – None –</li> <li>• Duration</li> <li>• Seconds</li> </ul>
Delay Duration	If <a href="#">Delay On Start</a> = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If <a href="#">Delay On Start</a> = Seconds; Number of seconds to delay after starting the task.
<b>Time Options</b>	This section contains information on time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see <a href="#">Late Start Type</a> ). To determine whether a task instance started late, <a href="#">open the task instance</a> and locate the <a href="#">Started Late</a> field; the field is checked if the instance started after the specified time. The <a href="#">Started Late</a> field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	<p>Required if <a href="#">Late Start</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it starts after the specified time.</li> <li>• Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific <a href="#">start time</a>.</li> </ul>
Late Start Time	If <a href="#">Late Start Type</a> = Time; Time after which the task <a href="#">start time</a> is considered late. Use HH:MM, 24-hour time.
Late Start Duration	<p>If <a href="#">Late Start Type</a> = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late.</p> <p>For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the <a href="#">Hold on Start</a> field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.</p>
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the <a href="#">Late Start</a> fields.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see <a href="#">Late Finish Type</a> ). To determine whether a task instance finished late, <a href="#">open the task instance</a> and locate the <a href="#">Finished Late</a> field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	<p>Required if <a href="#">Late Finish</a> is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes after the specified time (see <a href="#">Late Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see <a href="#">Late Finish Duration</a>). The task must have a specific finish time.</li> </ul>

Late Finish Time	If <a href="#">Late Finish Type</a> = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Duration	If <a href="#">Late Finish Type</a> = Duration; Longest amount of time this task instance should take to run.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the <a href="#">Late Finish</a> fields.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see <a href="#">Early Finish Type</a> ). To determine whether a task instance finished early, <a href="#">open the task instance</a> and locate the <a href="#">Finished Early</a> field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if <a href="#">Early Finish</a> is enabled.  Options: <ul style="list-style-type: none"> <li>• Time - Flag the task if it finishes before the specified time (see <a href="#">Early Finish Time</a>).</li> <li>• Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see <a href="#">Early Finish Duration</a>). The task must have a specific finish time.</li> </ul>
Early Finish Time	If <a href="#">Early Finish Type</a> = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Duration	If <a href="#">Early Finish Type</a> = Duration; Shortest amount of time this task instance should take to run.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the <a href="#">Early Finish</a> fields.
<b>Critical Path Options</b>	This section contains <a href="#">Critical Path</a> -related specifications for the task.

<p>Calculate Critical Path</p>	<p>If enabled (checked), the Controller calculates the Critical Path of this Workflow and, by default, displays it in the Workflow Monitor. You can toggle between the normal view and the Critical Path view by using the <a href="#">Toggle Critical Path View</a> icon on the <a href="#">Workflow Monitor toolbar</a>.</p> <p>If disabled (unchecked), the Controller does not calculate the Critical Path of this Workflow and display it in the Workflow Monitor, and the <a href="#">Toggle Critical Path View</a> icon on the <a href="#">Workflow Monitor toolbar</a> is disabled.</p> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b> This field displays only if the <a href="#">Critical Path Calculations Permitted</a> Universal Controller system property is set to <b>true</b>.</p> </div> <div style="background-color: #ffe6e6; padding: 10px; margin: 10px 0;"> <p> <b>Important</b></p> <ul style="list-style-type: none"> <li>When restoring a Workflow Details <a href="#">Version</a>, the Calculate Critical Path setting (enabled or disabled) will be preserved.</li> <li>When <a href="#">promoting</a> a Workflow record or importing (<a href="#">list</a> or <a href="#">bulk</a>) Workflow Details:                             <ul style="list-style-type: none"> <li><a href="#">Critical Path Calculations Permitted</a> setting will not change.</li> <li><b>Calculate Critical Path</b>, if enabled, will be disabled.</li> </ul> </li> <li>If the database is "dropped" for any reason:                             <ul style="list-style-type: none"> <li><a href="#">Critical Path Calculations Permitted</a> will be set to <b>false</b>.</li> <li><b>Calculate Critical Path</b>, if enabled, will be disabled.</li> </ul> </li> </ul> </div>
<p>CP Duration</p>	<p>Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the <a href="#">CP Duration Unit</a> field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.</p>
<p>CP Duration (Resolved)</p>	<p>Displays the current resolved value of the <a href="#">CP Duration</a> field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time <a href="#">CP Duration</a> will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within <a href="#">CP Duration</a>. If the Controller is unable to resolve <a href="#">CP Duration</a> or it resolves to an invalid value, <a href="#">CP Duration</a> will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.</p>
<p>CP Duration Unit</p>	<p>Type of CP Duration; used in conjunction with the <a href="#">CP Duration</a> field. For example, for a CP Duration of two minutes, specify 2 in the <a href="#">CP Duration</a> field and select <b>Minutes</b> in this field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>Seconds</li> <li>Minutes</li> <li>Hours</li> </ul> <p>Default is Minutes.</p>
<p><b>Statistics</b></p>	<p>This section contains time-related statistics for the task instance.</p>
<p>User Estimated End Time</p>	<p>System-supplied; if the user entered information into the <a href="#">User Estimated Duration</a> field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.</p>
<p>Average Estimated End Time</p>	<p>System-supplied; average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.</p>

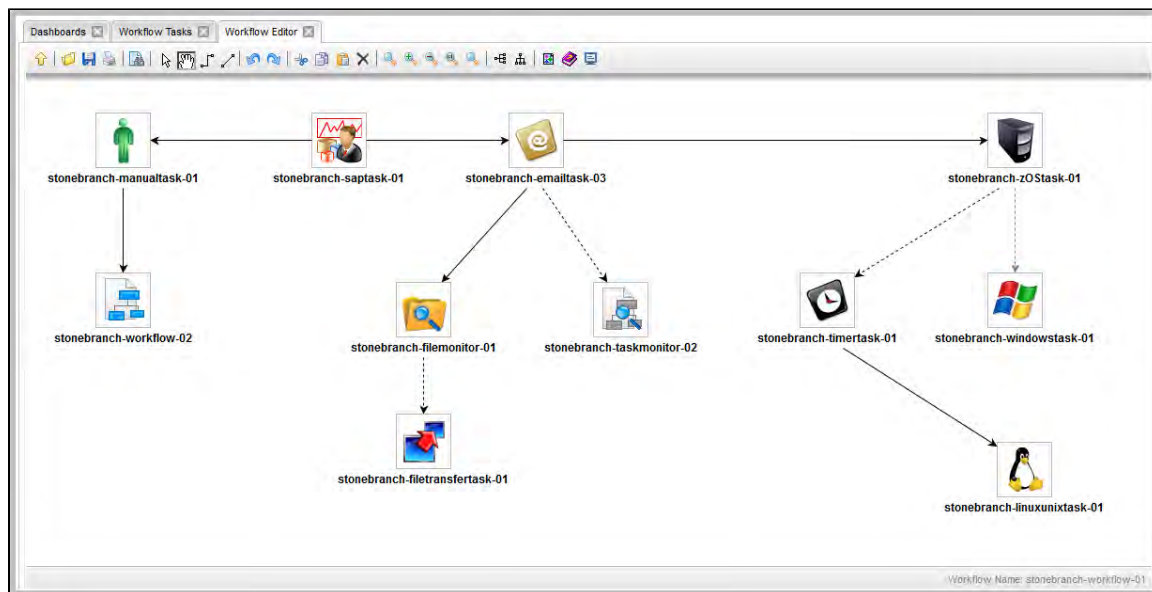
<b>Shortest Estimated End Time</b>	System-supplied; shortest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Longest Estimated End Time</b>	System-supplied; longest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
<b>Projected End Time</b>	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated <a href="#">critical path duration</a> .
<b>Buttons</b>	This section identifies the buttons displayed above and below the Workflow Task Instance Details that let you perform various actions.
<b>Update</b>	Saves updates to the record.
<b>Force Finish</b>	See <a href="#">Force Finishing a Task</a> .
<b>Hold</b>	Places the task instance on Hold (see <a href="#">Putting a Task on Hold</a> ).
<b>Skip</b>	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See <a href="#">Skipping a Task</a> .
<b>Release Recursive</b>	Releases the entire held workflow and its tasks (see <a href="#">Releasing a Task From Hold</a> ).
<b>View Parent</b>	Displays the task instance Details for the parent Workflow of this task instance.
<b>View Workflow</b>	Displays the graphical workflow.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this task instance.
<b>Tabs</b>	This section identifies the tabs across the top of the Workflow Task Instance Details that provide access to additional information about the task instance.
<b>Workflow Task Instance</b>	Displays details about this Workflow task instance.
<b>Virtual Resources</b>	Lists all <a href="#">Virtual Resources</a> to which this task is assigned.
<b>Exclusive Requests</b>	Lists all records in the <a href="#">Exclusive Requests</a> table ( <code>ops_exclusive_order</code> ) for this task instance.
<b>Step Conditions</b>	Lists all <a href="#">step conditions</a> defined for this task.
<b>Notes</b>	Lists all <a href="#">notes</a> associated with this record.

## Designing a Workflow

The Workflow Editor lets you select tasks for a Workflow, position them within the Workflow, and specify dependency relationships between the tasks.

Workflows can be as simple or elaborate as necessary. Zooming and scrolling features are provided that allow you to work on small areas of a very large Workflow, or to create simple ad hoc Workflows.

The following is a sample Workflow Editor for a Workflow consisting of a variety of task types. There are no restrictions on the types of tasks that can be included as part of a single Workflow; you can also put other Workflows into a Workflow.



See [Workflow Editor Icons](#) for a guide to the editing tools available for designing Workflows; for more detailed instructions, see the individual topics in this section, below.

## Designing, Modifying, or Viewing Multiple Workflows

You can design, modify, or simply view multiple Workflows in the Workflow Editor at the same time.




<b>Step 1</b>	From the Workflow Tasks list, open the Workflow task for which you want to design, modify, or view the Workflow.
<b>Step 2</b>	Click the <b>Edit Workflow</b> button to display the Workflow Editor for the Workflow.
<b>Step 3</b>	Click the <b>Workflow Tasks</b> tab at the top of the Workflow Editor (next to the <b>Workflow Editor</b> tab) to redisplay the Workflow Tasks list.
<b>Step 4</b>	Open another Workflow task for which you want to design, modify, or view the Workflow.
<b>Step 5</b>	Click the <b>Edit Workflow</b> button to display the Workflow Editor for this second Workflow under a second tab.
<b>Step 6</b>	Open and display as many Workflows as desired, clicking the appropriate tab to create, modify, and view each one.

## Workflow Editor Modes

The actions you can perform within the Workflow Editor depend on the Workflow Editor mode.

The Workflow Editor has three modes. Each mode, which you select by clicking the appropriate icon in the [Workflow Editor toolbar](#), allows you to use one or more specific Workflow Editor [tools](#).

Icon	Mode	Description
	<b>Select</b>	Clicking the <a href="#">Select</a> icon on the Workflow Editor toolbar places the Workflow Editor in <b>Select</b> mode, which allows you to use all <a href="#">Workflow Editor tools</a> except <a href="#">Connect</a> and <a href="#">Pan</a> . The <b>Select</b> mode is the default mode for the Workflow Editor.

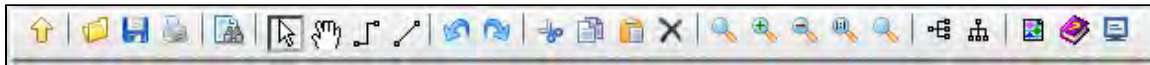
	<p><b>Connect</b></p>	<p>Clicking a <a href="#">Connect</a> icon on the Workflow Editor toolbar places the Workflow Editor in <b>Connect</b> mode, which allows you to <a href="#">create connections</a> between tasks.</p> <p>In <b>Connect</b> mode, you also can use all other <a href="#">Workflow Editor tools</a> except <a href="#">Connect</a>.</p>
	<p><b>Pan</b></p>	<p>Clicking the <a href="#">Pan</a> icon on the Workflow Editor toolbar places the Workflow Editor in <b>Pan</b> mode, which allows you to scroll around in the Workflow. (You also can use the <a href="#">Outline</a> tool in any mode) to scroll around in the Workflow.</p> <p>In <b>Pan</b> mode, you also can use all other <a href="#">Workflow Editor tools</a> except <a href="#">Connect</a>.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>  <b>Pan</b> mode does not allow you to use the drag and drop method for <a href="#">moving</a>, <a href="#">deleting</a>, and <a href="#">copying</a> groups of Workflow elements.</p> </div>

## Workflow Editor Toolbar

The Workflow Editor toolbar, which displays above the Workflow Editor, contains icons for every tool that you need to design a Workflow.

A shadowed outline around the icon in the toolbar indicates the currently selected [Workflow Editor mode](#).



The following example shows that the Workflow Editor is in **Select** mode.























You also can perform all [task actions](#) and [connector actions](#) in any mode.

## Workflow Editor Tools

The following table describes the tools used to define Workflows, including the tools associated with the three [Workflow Editor modes](#). The tools are listed by icon, as they appear - left to right - in the [Workflow Editor toolbar](#).

Icon	Tool	Description
	<p>Go to Parent</p>	<p>If this Workflow is embedded in another Workflow, navigates to the parent. If this Workflow has more than one parent, clicking this icon displays a list of all parent Workflows; in this case, to navigate to a parent Workflow, double-click the Workflow's icon. To return to your original Workflow, click its name. (The current Workflow name displays in the lower corner of the editor.)</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      To open an embedded Workflow (sub-Workflow) from its Parent Workflow, double-click the embedded Workflow.</p> </div>

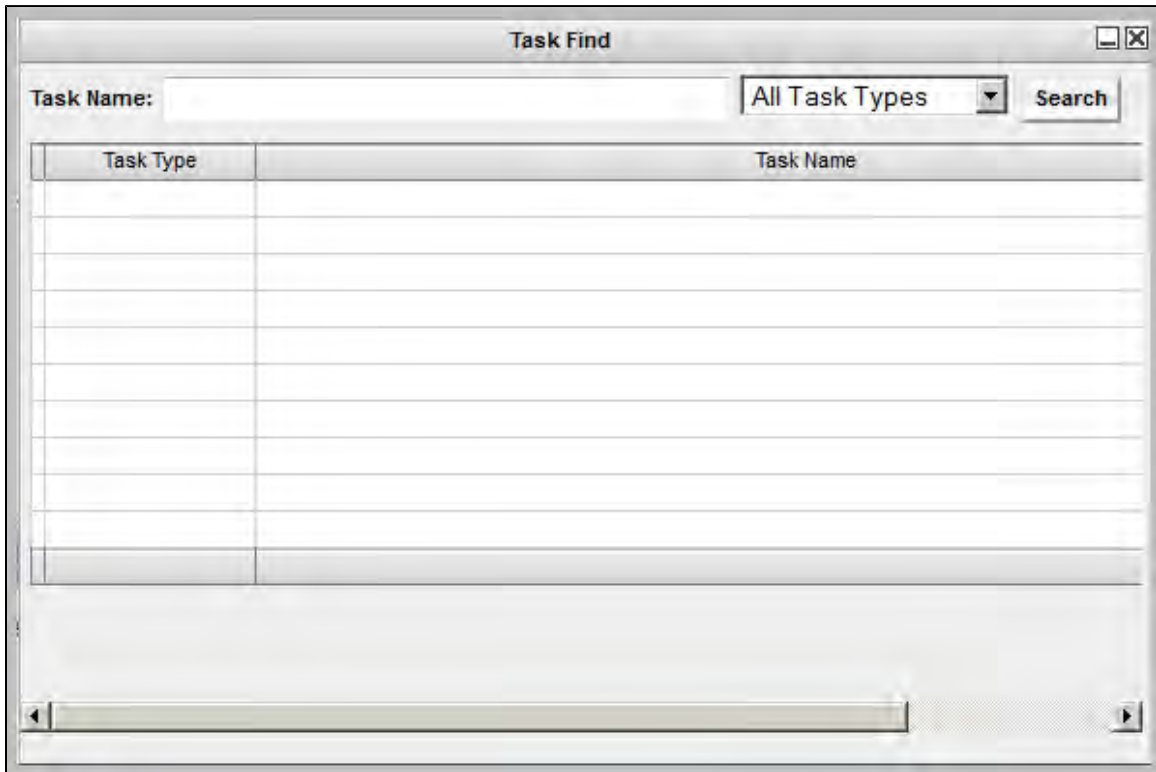


	Pan	<p>Places the Workflow Editor in <a href="#">Pan mode</a>.</p> <p>To pan around the Workflow, click anywhere in the Workflow Editor canvas and drag your cursor to display any section of the Workflow.</p> <p>To return to your original location, click the <a href="#">Actual Size</a> icon.</p>
	Connect (bent) Connect (straight)	<p>Places the Workflow Editor in <a href="#">Connect mode</a>.</p> <p>To create a connection:</p> <ol style="list-style-type: none"> <li>1. Click either icon.</li> <li>2. Click a predecessor task. If you are using Firefox, click the center of the task icon. If you are using Internet Explorer, click the task name.</li> <li>3. Drag the cursor to the successor task. You will see a colored line as you drag.</li> <li>4. When you reach the successor task, release the cursor. The connector appears as a straight or bent line, depending on which icon you selected.</li> </ol>
	Undo	Click to undo the most recent change.
	Redo	Click to redo the most recent change that you undid by clicking <a href="#">Undo</a> .
	Cut	<p>Deletes the selected element(s) (tasks, connectors, or both) and keeps a copy in memory. Use <a href="#">Ctrl+Click</a> to select an multiple elements.</p> <div style="background-color: #ffffcc; padding: 5px; margin-top: 10px;"> <p> <b>Note</b> Do not use cut and paste to move Workflow elements; use <a href="#">select and drag</a>.</p> </div>
	Copy	Copies the selected element(s) (tasks, connectors, or both). Use <a href="#">Ctrl+Click</a> to select and copy multiple elements.
	Paste	Pastes the copied or cut element(s) to the currently open Workflow.
	Delete	Permanently deletes the selected elements. Delete does not keep a copy of the deleted elements in memory.
	Fit	Fits the Workflow into the display. If necessary, this shrinks the icons and size of the Workflow in order to make it fit. You can undo a <a href="#">Fit</a> by clicking the <a href="#">Actual Size</a> icon.
	Zoom In	Zooms in (enlarges) the Workflow. To return the Workflow to its default size, click the <a href="#">Actual Size</a> icon.
	Zoom Out	Zooms out (diminishes) the Workflow. To return the Workflow to its default size, click the <a href="#">Actual Size</a> icon.
	Actual Size	Returns the Workflow to its default size after a <a href="#">Fit</a> or <a href="#">Zoom</a> .
	Zoom	Opens a window that allows you to specify a zoom ratio. For example, to double the size of the Workflow, enter 200 and click <b>OK</b> . To return the Workflow to its default size, click the <a href="#">Actual Size</a> icon.
	Horizontal Layout	Reformats the Workflow into a horizontal layout.
	Vertical Layout	Reformats the Workflow into a vertical layout.
	Toggle Vertex Style	For running Workflows, switches the icon display between status-related icons and task-related icons (see <a href="#">Monitoring Workflows</a> ). This icon only appears on the icon bar when you are monitoring a running Workflow.
	Outline	<p>For large Workflows, the outline provides a way of positioning a specific area of the Workflow in the display, without using the <a href="#">Pan mode</a>.</p> <ol style="list-style-type: none"> <li>1. Click the <b>Outline</b> icon. The <b>Outline</b> window opens.</li> <li>2. In the <b>Outline</b> window, move and/or resize the blue box to identify the area of the Workflow you want to work on. The display repositions to show only the area within the blue box.</li> </ol>
	Help	Displays help documentation for Workflows.
	Console	While a Workflow is running, you can click the <a href="#">Console</a> icon to display processing messages.



## Searching For and Adding Tasks

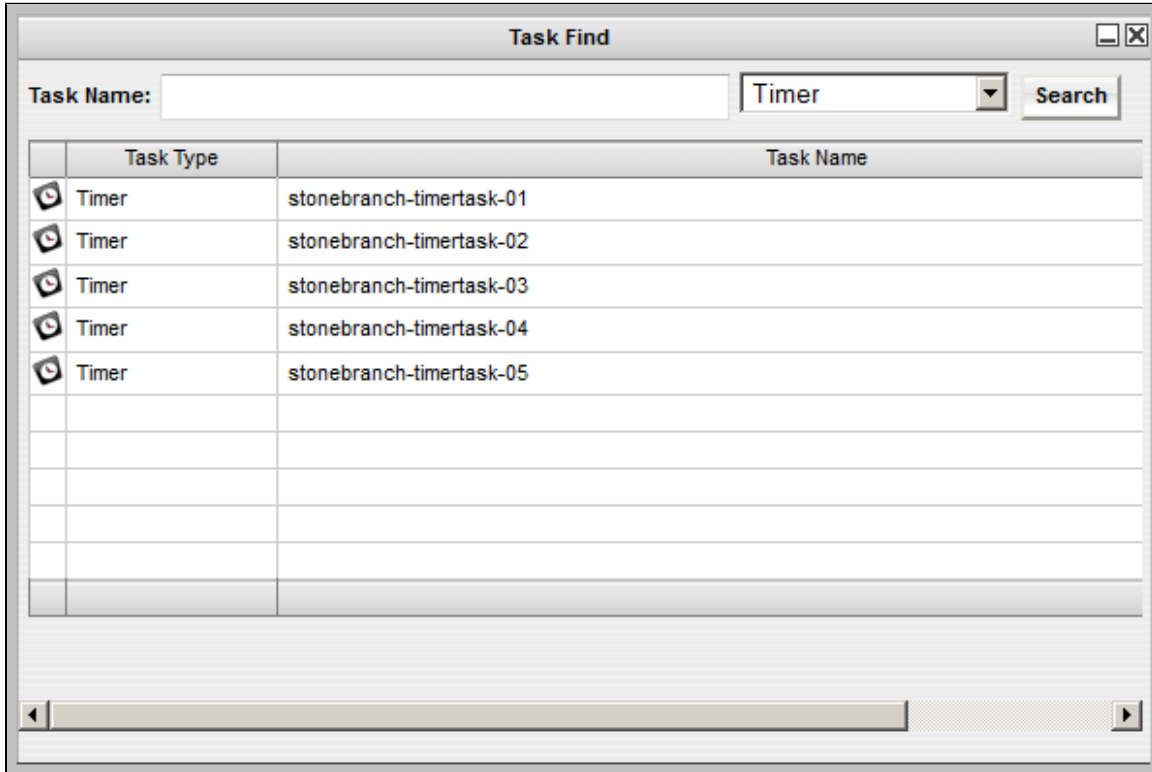
**Step 1** Click the Add Task icon. The **Task Find** dialog displays.



**Step 2** Several methods are available for finding tasks:

- To find a specific task, type the name into the Task name field and click **Search**.
- To display a list of tasks whose names match a string, type the string into the Task name field and use one or more [wildcards](#). Wildcard(s) can appear anywhere in the string. For example, to find tasks whose name begins with "Fee", type **Fee** in the Task name field and click **Search**.
- To display a list of tasks of a specific type, such as Windows, select the task type from the drop-down menu and click **Search**.
- To display a list of all tasks, select All Task Types (the default selection) from the drop-down menu and click **Search**.

The Task Find dialog lists the task(s) that match your search criteria.

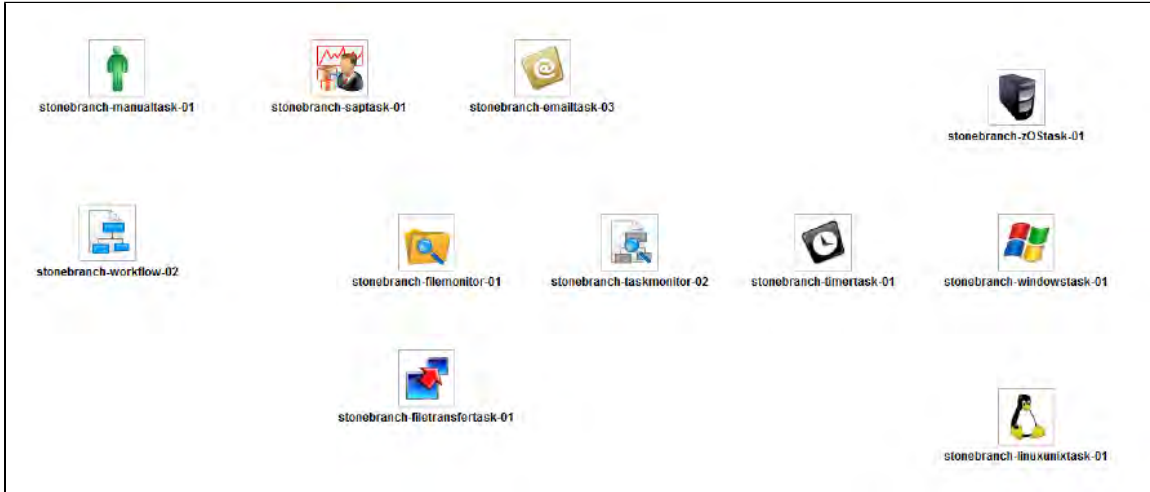


**Step 3** To add a task to the Workflow canvas, click the icon to the left of the task and drag it onto the canvas.

You can add any task to a Workflow multiple times. To differentiate between multiple additions of the same task in a Workflow, you can assign each of them a unique name used only within the Workflow; the name of the task in the Task Details will not change. To change the name of a task within a Workflow, display the [Task Properties](#) menu and select a new name in the **name** field.

**Step 4** Repeat these steps until you have added all the tasks you need.

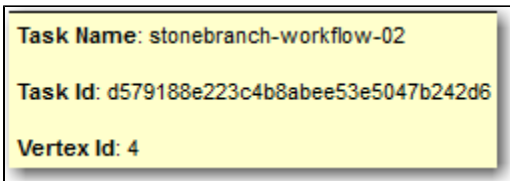
**Step 5** Position the tasks on the canvas as desired. The connections that you will make between the tasks determine the order in which the tasks run, so position the tasks accordingly. For example:



**Step 6** To close the **Task Find** window, click the **X** in the upper right corner. Or, to keep the window open but minimized, click the minimize icon.

## Task Details

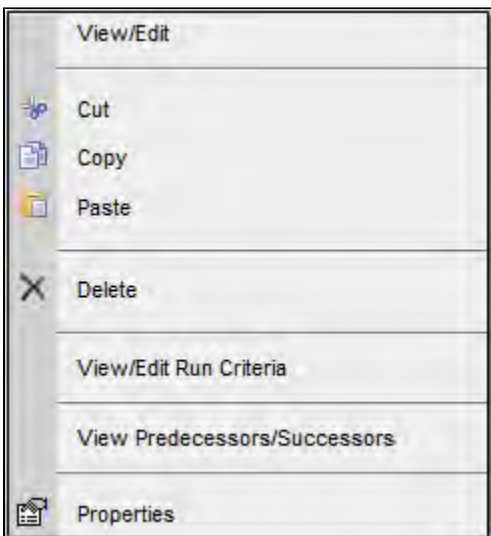
You can display detailed information for any task by hovering your mouse over the task. The following menu displays:



## Task Actions

For each task in a Workflow, the Controller provides a menu of actions that you can take on that task. You can perform task actions in any Workflow Editor mode.

To display the menu of task actions, right-click a task.

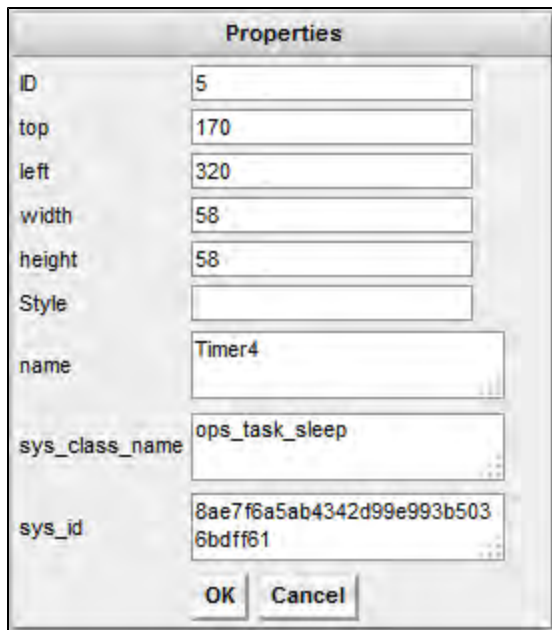


The following table describes each action in the menu:

Action	Description
View/Edit	Allows you to view and edit the Task Details for this task.
Cut	Cuts the task from its location in the Workflow. You can paste a cut task back into the Workflow.
Copy	Creates a copy of the task for inclusion in the Workflow.
Paste	Pastes a copy of the task into the Workflow.
Delete	Deletes the task from the Workflow. You cannot paste a deleted task back into the Workflow.
View/Edit Run Criteria	Allows you to view and edit any <a href="#">run criteria</a> that has been created for this task.  (This action is disabled for tasks that have been added to a Workflow but not saved.)
View/Edit z/OS Step Actions	z/OS Tasks only; Allows you to view and edit any <a href="#">z/OS step actions</a> that have been created for this task.  (This action is disabled for tasks that have been added to a Workflow but not saved.)
View Predecessors/Successors	Allows you to view all <a href="#">predecessors and successors</a> of this task in the Workflow.
Properties	Displays a menu of <a href="#">properties</a> for the task.

## Task Properties

One of the [task actions](#) available for any task in a Workflow is to display a list of properties for that task.

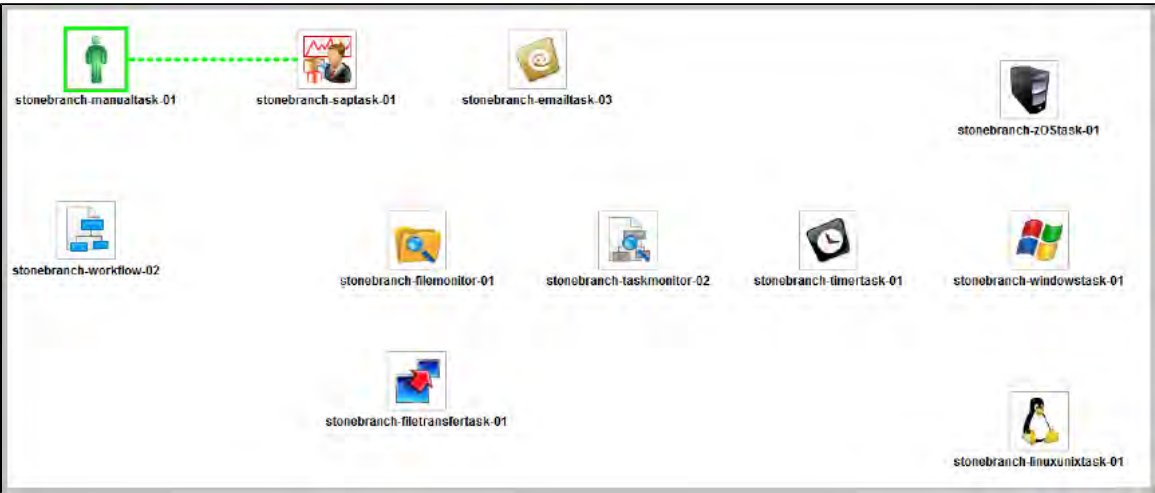
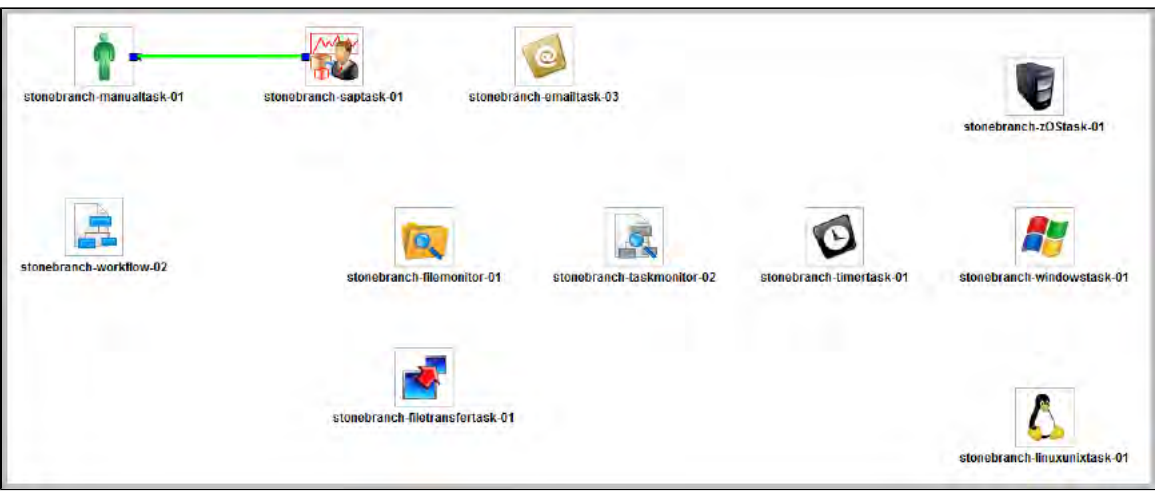


You can change the name of a task within a Workflow by entering a new name in the **name** field. By Default, the **name** of a task is its name in the Task Details. Changing the **name** of a task within a Workflow does not change its name in the Task Details.

## Specifying Connections

After you have added tasks and positioned them on the Workflow Editor canvas, you must connect the tasks.

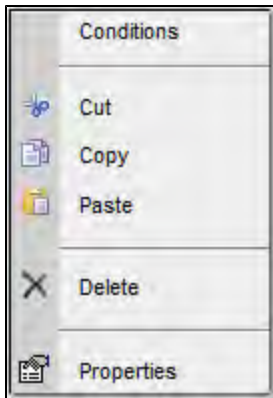
**Step 1** Click one of the [Connect](#) icons to place the Workflow Editor in [Connect mode](#).

<p><b>Step 2</b></p>	<p>Click the predecessor task; that is, the task whose status will trigger the next task.</p> <ul style="list-style-type: none"> <li>• For Firefox, make sure you click the center of the task icon.</li> <li>• For Internet Explorer, click the task name, <b>hold down the cursor</b>, and drag the connector.</li> </ul>
<p><b>Step 3</b></p>	<p>Drag the connector to the successor task; that is, the task that will be triggered. As you drag, a dotted line displays, indicating the connection. Drag the connector all the way to the center of the successor, highlighted task.</p>  <p>The screenshot shows a grid of task icons. A green dotted line with a small arrowhead at the end is being dragged from the center of the 'stonebranch-manualtask-01' icon (a person) to the center of the 'stonebranch-saptask-01' icon (a person at a computer). The 'stonebranch-saptask-01' icon is highlighted with a light blue background. Other task icons include 'stonebranch-emailtask-03', 'stonebranch-zOSTask-01', 'stonebranch-workflow-02', 'stonebranch-filemonitor-01', 'stonebranch-taskmonitor-02', 'stonebranch-timertask-01', 'stonebranch-windowstask-01', 'stonebranch-filetransfertask-01', and 'stonebranch-linuxunixtask-01'.</p>
<p><b>Step 4</b></p>	<p>When the cursor is at the center of the successor task icon, release the mouse button. The connector is in place and still highlighted. Optionally, you can reposition the connection by dragging it to a new location. Arrows on the connectors indicate the direction of the Workflow.</p>  <p>The screenshot shows the same grid of task icons. A solid green line with arrowheads at both ends now connects the center of 'stonebranch-manualtask-01' to the center of 'stonebranch-saptask-01'. The 'stonebranch-saptask-01' icon remains highlighted. The other task icons are the same as in the previous screenshot.</p>
<p><b>Step 5</b></p>	<p>Repeat this process for other connectors to be added.</p>

## Connector Actions

For each connector in a Workflow, the Controller provides a menu of actions that you can take on that connection. You can perform connector actions in any [Workflow Editor mode](#).

To display the menu of connector actions, right-click a connection.

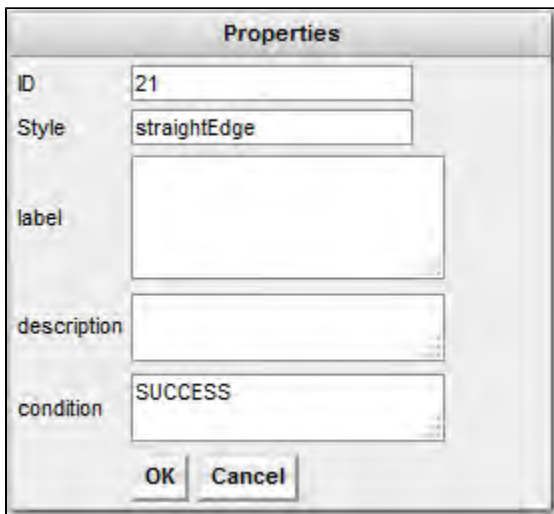


The following table describes each action in the menu:

Action	Description
Conditions	Allows you to <a href="#">select a dependency condition</a> for the connection.
Cut	Cuts the task from its location in the Workflow. You can paste a cut task back into the Workflow.
Copy	Creates a copy of the task for inclusion in the Workflow.
Paste	Pastes a copy of the connector into the Workflow.
Delete	Deletes the connector from the Workflow. You cannot paste a deleted connector back into the Workflow.
Properties	Displays a menu of <a href="#">properties</a> for the connector.

## Connector Properties

One of the [connector actions](#) available for any connector in a Workflow is to display a list of properties for that connector.



The information in the Connector properties is view-only.

## Specifying Conditions on Connections

When you create a connection between the tasks in a Workflow, you can specify a dependency condition between the predecessor and successor task. The successor task will run if the condition that you specify matches the condition of the predecessor task.

By default, a Success condition is specified automatically for a connection when you create it; if the predecessor task runs to Success, the successor task will run.

The dependency condition that you select for a connection, as allowed for the task type of the predecessor task (see [Conditions per Task Type](#),

below), determines the format of the connector in the Workflow Editor.

Condition	Connector Format	Description
Success	Solid black line	Run the successor task if the predecessor task goes to Success.
Failure	Dotted black line	Run the successor task if the predecessor task goes to Failure.
Success/Failure	Dotted black line	Run the successor task if the predecessor task goes to Success or Failure.
Exit Code(s)	Dotted black line	Run the successor task if the predecessor task returns one of the specified exit code(s). Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Step Conditions	Dotted gray line	For predecessor z/OS tasks only: Run the successor task if the running predecessor z/OS task has a step end matching the specified Step Condition(s).

Connector Graphics for All Condition Types, below, illustrates a composite Workflow containing connectors for all condition types.

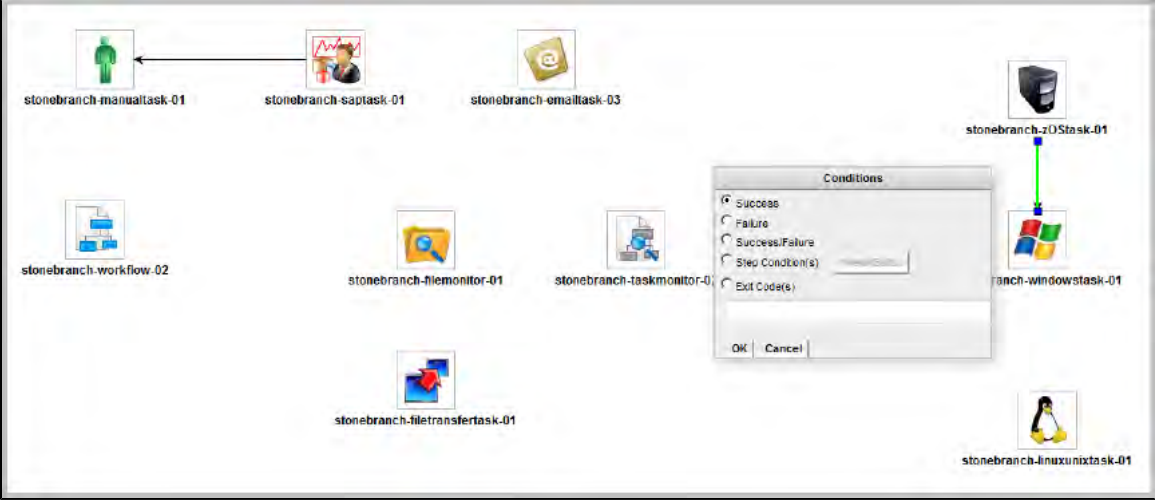
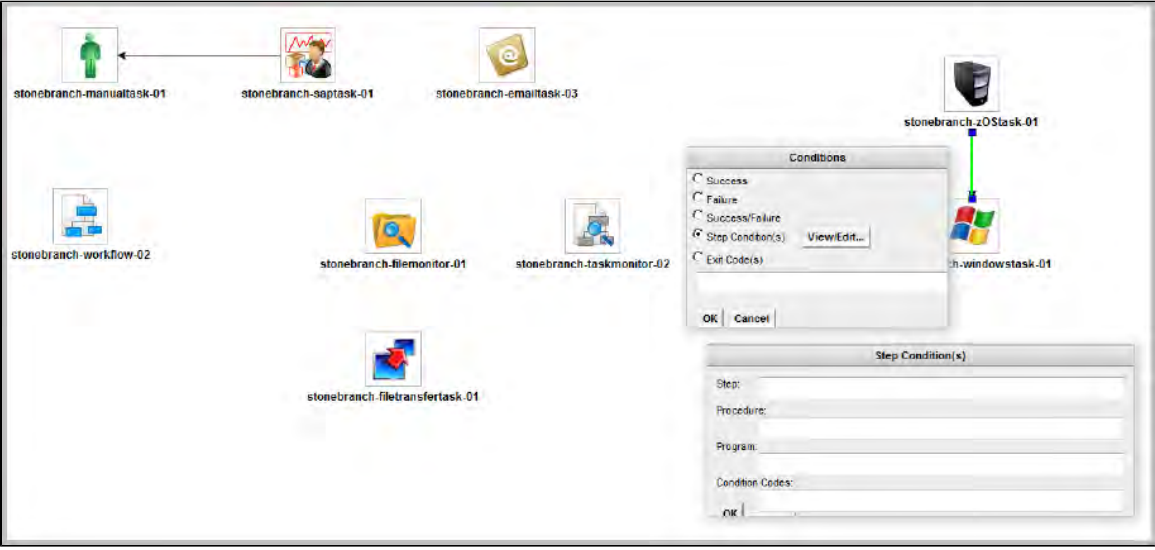
## Conditions per Task Type

The following table identifies the dependency conditions that are supported for each type of task:

Task Type	Success	Failure	Success/Failure	Step Condition(s)	Exit Code(s)
Workflow	✓				✓
Linux/Unix	✓	✓	✓		✓
Windows	✓	✓	✓		✓
z/OS	✓	✓	✓	✓	✓
Universal Command	✓	✓	✓		✓
SAP	✓	✓	✓		✓
File Transfer	✓	✓	✓		✓
Manual	✓				✓
Timer	✓				✓
SQL	✓	✓	✓		✓
Stored Procedures	✓	✓	✓		✓
Email	✓	✓	✓		✓
Task Monitor	✓	✓	✓		✓
File Monitor	✓	✓	✓		✓
FTP File Monitor	✓	✓	✓		✓
System Monitor	✓	✓	✓		✓
Variable Monitor	✓	✓	✓		✓
Application Control	✓	✓	✓		✓

## Specifying a Condition

To specify a dependency condition for a connection between a predecessor and successor task:

<p><b>Step 1</b></p>	<p>Hover your mouse over the connection to view the currently selected condition. If you want to change the condition, right-click the connection to display a <a href="#">Connector Actions</a> menu.</p>
<p><b>Step 2</b></p>	<p>Select <b>Conditions</b>. The Conditions dialog displays.</p> 
<p><b>Step 3</b></p>	<p>Specify a condition (as <a href="#">supported</a> for each task type).</p>
<p><b>Step 4</b></p>	<p>If you selected <b>Step Condition(s)</b> for a connection to a predecessor z/OS task, click the <b>View/Edit...</b> button to display a Step Conditions dialog that lets you define the step conditions.</p> 
<p>Using the field descriptions <a href="#">below</a> as a guide, complete the fields and click <b>OK</b>.</p>	
<p><b>Step 5</b></p>	<p>Click <b>OK</b> on the Conditions dialog.</p>
<p><b>Step 6</b></p>	<p>To see the condition that is specified for a connection, hover your cursor over the connector (see <a href="#">Connector Graphics for All Condition Types</a>, below).</p>

## Step Conditions

A Step Condition - for a z/OS task only - is an intermediate condition that is evaluated immediately after each z/OS step end. In other words, it does not specify a condition to be met when the z/OS task completes.

In this way, Step Conditions allow a successor task to run before its predecessor task has completed. The successor task may require only that a step in the z/OS task completes, not the entire task.

Step Condition connectors display in gray to distinguish the difference between intermediate Step Conditions and task completion Conditions.



On z/OS task instance completion - specifically, Failed, Success or Finished - Step Conditions are not relevant and are not evaluated. If one or more non-Step Condition dependencies were satisfied, all remaining unsatisfied dependencies, including Step Condition dependencies, become unreachable and their associated paths are skipped.

### Step Condition(s) Field Descriptions

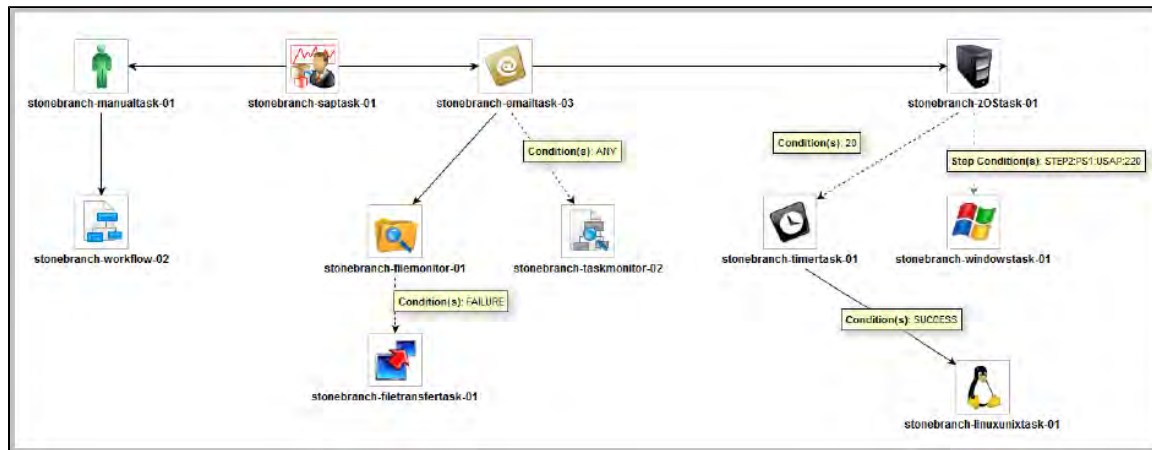
The following table describes the fields on the Step Condition(s) dialog.

Field Name	Description
Step	Job step name to match. A blank value or an asterisk (*) will match any job step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Procedure	Procedure step name to match. A blank value or an asterisk (*) will match any procedure step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Program	Program name to match. A blank value or an asterisk (*) will match any program name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Condition Codes	Conditions codes are integer return codes from the program or ABEND codes. Integer return codes are specified as a comma-separated list of integer values or ranges. Ranges are specified with a dash (-) separating the lower and upper bounds of the range. The z/OS job step return code range is 0-4095. ABEND codes are specified directly as either a user ABEND or a system ABEND. The ABEND code must be specified verbatim including leading zeroes.  For example: 1,6-4095,Sxxx,Unnnn,JCLERR

### Connector Graphics for All Condition Types

The following illustration is a composite Workflow showing the connector formats for all condition types and the information that displays for each condition type when you hover your cursor over the connector.

Condition	Hover Display
Success	Condition(s): SUCCESS
Failure	Condition(s): FAILURE
Success/Failure	Condition(s): ANY
Exit Code(s)	Condition(s): Exit Code(s)
Step Condition(s)	Step Condition(s): Step, Procedure, Program, Condition Codes



### Creating Conditional Paths

The Controller allows you to specify a separate processing path for each possible condition between a predecessor task and a successor task. The Controller selects the appropriate conditional path when the predecessor task goes to a finished status (Success or Failure). As a result, at least one successor dependency is satisfied and at least one successor dependency is not satisfied.

For example, you could specify a conditional path containing a group of tasks that will run if the predecessor task goes to Success, and a second conditional path containing a group of tasks that will run if the predecessor task goes to Failure. When the predecessor task has run to completion, the tasks in the path whose condition meets the condition of the predecessor task will run, and the tasks in the path whose condition does not meet the condition of the predecessor task will go to a Skipped status.

Further examples:

**Example 1**

Task A is at the top of the Workflow. Three conditional paths have been specified for Task A: one for Failure and two for Success. Task A executes and goes to Success status. The Controller places all of the tasks in the Failure conditional path into Skipped status and the tasks in the two Success conditional paths begin running.

**Example 2**

Task A is at the top of the Workflow. Two conditional paths have been specified: one for exit codes 1 through 10, the second for exit codes 11 through 20.

- If Task A completes with exit code 5, the tasks in the first path run and the second path is skipped.
- If Task A completes with exit code 15, the first path is skipped and the tasks in the second path run.
- If Task A completes with exit code 25, neither condition is satisfied and both paths remain in Waiting status.

### Conditions for Multiple Connections

If a task is connected to multiple predecessor tasks, that successor task remains in Waiting status until the condition of each of its immediate predecessor tasks is evaluated. If all of its immediate predecessor tasks have been Skipped, the successor task is Skipped. If at least one of its immediate predecessor tasks has run to completion, the successor task will run if the specified dependency condition matches the condition of the predecessor task.

For example, if a task has four immediate predecessor tasks, and three of the immediate predecessor tasks have been Skipped and the fourth predecessor task has failed, and the dependency condition between the fourth predecessor task and the successor task is Failure, the successor task will run. (Likewise, if the fourth predecessor task has run to Success, and the dependency condition between the fourth predecessor task and the successor task is Success, the successor task will run.)

The status of the tasks in the conditional paths leading to the immediate predecessor tasks do not affect whether or not the successor tasks will run. All tasks leading to an immediate predecessor tasks do not have to have run in order for the successor task to run.

### Moving Workflow Elements

After you have positioned tasks and connectors on the Workflow Editor canvas, you can move these elements as needed.

#### Move a Single Task

Click a task and drag it to a new location. If the task has any connectors attached, they remain connected, and lengthen or shorten as necessary.

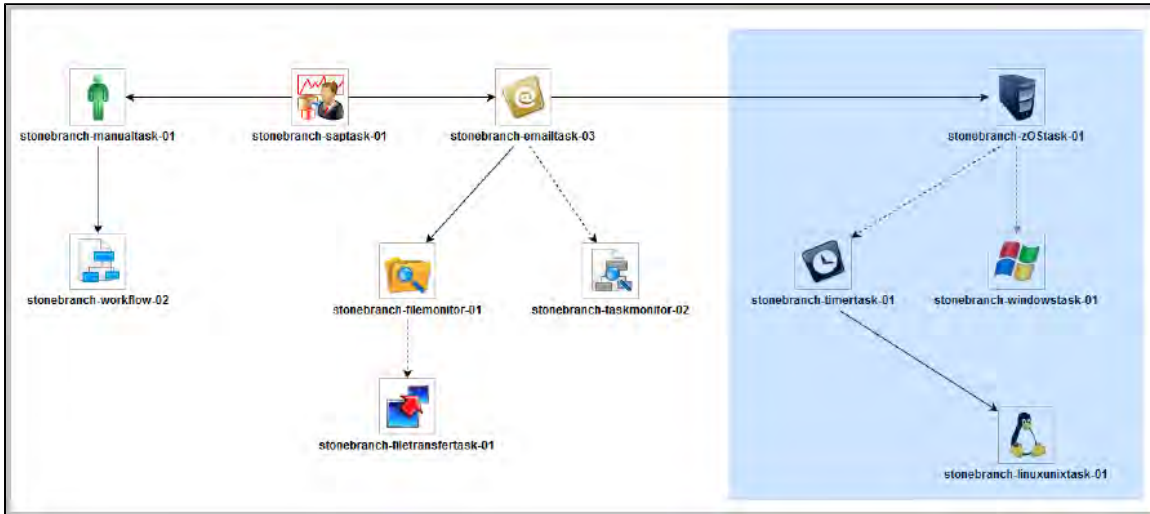
#### Move a Single Connector

<b>Step 1</b>	Click the connector you want to move.
<b>Step 2</b>	Position your cursor over either end of the connector (at the predecessor or successor task) and, when the cursor changes to a "pointing hand" icon, drag that end of the connector so that it connects to a different task.
<b>Step 3</b>	As desired, repeat Step 2 for the other end of the connector.

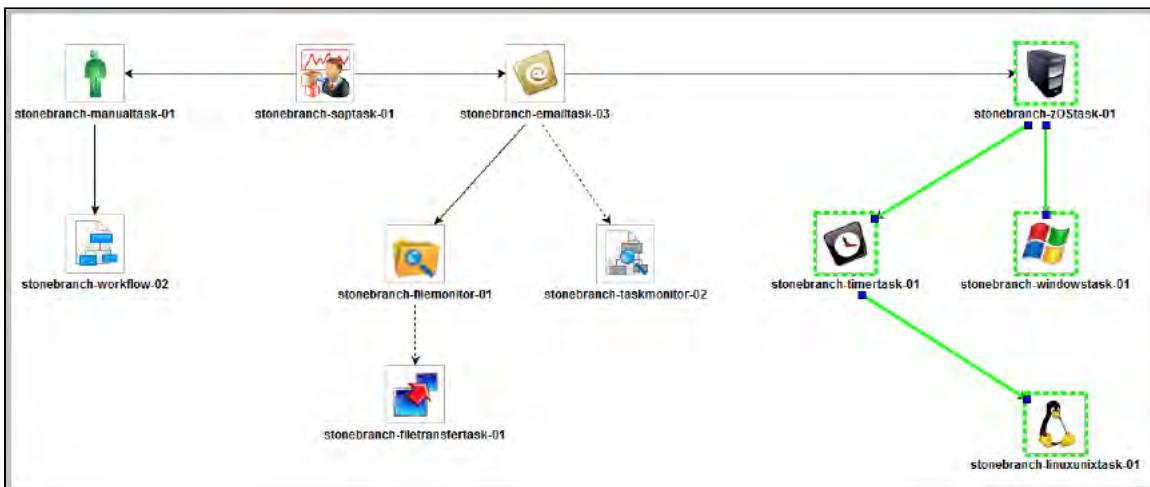
#### Move a Group of Tasks and Connectors

<b>Step 1</b>	Click the <b>Select</b> icon or either <b>Connect</b> icon.
<b>Step 2</b>	Position the cursor near the group that you want to move.
<b>Step 3</b>	Click the Workflow Editor canvas and begin dragging. A blue shaded box appears. This identifies the selection area.

**Step 4** Drag the selection area over the tasks you want to select, as shown in the following example:



**Step 5** When you have selected the group of tasks and connectors that you want to move, release the mouse. The tasks and connectors included in the group are highlighted, as shown:



**Step 6** Hover your cursor over any element in the group until the Move cursor displays, then click that element and drag the group to the new location. All selected elements are moved.

**Step 7** To deselect the group, click elsewhere in the Workflow Editor canvas.



**Note**

You also can use Ctrl+click to select a group of elements or a selection of individual elements and drag them to a new location.

## Deleting Workflow Elements

**Step 1** Click an element, drag your cursor across the Workflow Editor canvas to select a group of elements, or use Ctrl+click to select one element, a group of elements, or a selection of individual elements.

(You cannot drag your cursor across the Workflow Editor canvas in Pan mode.)

**Step 2** Click the Delete icon. The selected element or group of elements is deleted.

## Copying Workflow Elements

<b>Step 1</b>	Click an element, drag your cursor across the Workflow Editor canvas to select a group of elements, or use Ctrl+click to select one element, a group of elements, or a selection of individual elements.  (You cannot drag your cursor across the Workflow Editor canvas in <a href="#">Pan mode</a> .)
<b>Step 2</b>	Click the <a href="#">Copy</a> icon to create a copy of the selected elements.
<b>Step 3</b>	Click the <a href="#">Paste</a> icon to paste the copied element(s) into the Workflow next to the original element(s).
<b>Step 4</b>	Click the copied element (or any element in a copied group) and drag it to a new location.

## Undoing and Redoing Workflow Changes

To undo the most recent change, click the [Undo](#) icon. To redo a change you just undid, click the [Redo](#) icon.

## Zooming In and Out

Several features are available for zooming in and out on large Workflows:

- Click the [Fit](#) icon to fit the entire Workflow onto the display.
- Click the [Zoom In](#) icon to increase the size of the Workflow (to view details).
- Click the [Zoom Out](#) icon to decrease the size of the Workflow (to view the entire Workflow)
- Click the [Actual Size](#) icon to return the Workflow to its actual (original) size.
- Click the [Zoom](#) icon to enter a zoom percentage.

## Panning Around in Large Workflows

For large Workflows that cannot be viewed entirely on your screen, you can pan around from area to area.

Two methods are provided:

- [Pan mode](#)
- [Outline](#) tool (in any mode)

### Pan Mode Method

<b>Step 1</b>	Click the <a href="#">Pan</a> icon to enter <a href="#">Pan mode</a> .
<b>Step 2</b>	Click the Workflow Editor canvas and drag the Workflow so that it displays the area you want to work on.

### Outline Tool Method

<b>Step 1</b>	Click the <a href="#">Outline</a> icon icon to open the <b>Outline</b> window.
<b>Step 2</b>	In the <b>Outline</b> window, move and/or resize the blue box to identify the area of the Workflow you want to work on. The display repositions itself as indicated in the <b>Outline</b> window.



#### Note

You also can move to different areas of a Workflow by using the [Find in Workflow...](#) tool.

## Workflow Coordinates

If you use [Pan mode](#) (or [Find in Workflow...](#)) to view different areas of a Workflow, the Controller preserves the coordinates of the last area that you viewed. If you leave the Workflow and return to it in the same browser session, the last viewed area of the Workflow displays.

To restore the displayed Workflow to its default, top-left position, you can either:

- Right-click any white space in the Workflow canvas to display a [pop-up menu](#) and click **Pan To Top**.
- Start a new browser session.

## Automatically Formatting a Workflow

You can apply automatic formatting to your Workflow. This process does not change any connections or content, but reorganizes the Workflow into a more legible display.

- To create a horizontal layout, click the [Horizontal Layout](#) icon.
- To create a vertical layout, click the [Vertical Layout](#) icon.

## Displaying Workflow Documentation

To display documentation on [monitoring Workflows](#), click the [Help](#) icon.

## Displaying Processing Messages

While a Workflow is running, you can click the [Console](#) icon to display processing messages. For more details, see [Monitoring Workflows](#).

## Saving the Workflow

Click the [Save](#) icon.

## Switching Between Workflows

You can switch between Workflows without using the navigation pane (see [Designing, Modifying, or Viewing Multiple Workflows](#)).

## Adding Skip/Run Criteria for Specific Tasks

You can add special instructions that specify conditions under which a specific task (or sub-Workflow) within the Workflow should be run or skipped. The Controller evaluates these instructions when determining whether to run each task within a Workflow.

For example, you might want to skip a specific task in a Workflow on a certain day or date, or you might want to run a specific task only if a certain variable is set to a specific value.



### Note

Calendar-based criteria are always evaluated using the task instance [Trigger Time](#) (or the task instance [Created time](#), if the workflow was launched manually).

When a workflow is launched or triggered, the Task Run Criteria provide a mechanism to decide whether a specific task (or sub-Workflow) within the Workflow should be run or skipped. If no Task Run Criteria are specified, a task will always run when the Workflow is launched or triggered. If Task Run Criteria are specified to run or skip a task, these will be evaluated as follows:

- Skip criteria will run the task unless the skip criteria is met. For example, a workflow is triggered every business day, and a task has a skip criteria of Tuesday. The task will run Monday, Wednesday, Thursday, and Friday. The task will not run on Tuesday.
- Run criteria will only run the task when the run criteria is met. For example, a workflow is triggered every business day and a task has a run criteria of Tuesday. The task will run on Tuesday. The task will be skipped on Monday, Wednesday, Thursday, and Friday.

Multiple conditions can be specified in a single Task Run Criteria definition. In this case, all of the conditions need to be met. For example, if in a single Task Run Criteria you specify for the task to run on a specific day of Tuesday, and if the variable RUN\_ME resolves to the value YES at Run Time, the task will be skipped unless both of these conditions are true.

When multiple Task Run Criteria definitions are specified for a single task, these are evaluated independently.



### Note

If skip criteria and run criteria both are met (true) on a given day, the skip criteria will take precedence.

## Creating New Run Criteria

<b>Step 1</b>	Display the Details of the Workflow for which you want to specify run criteria.
<b>Step 2</b>	Click the <b>Task Run Criteria</b> tab. The Task Run Criteria list displays a list of any existing task run criteria.

**Step 3** Click **New**. **Task Run Criteria Details** displays:



**Step 4** Using the [field descriptions](#), below, as a guide, complete the fields as needed. For example, to tell the Controller not to run a specific task on business days or holidays, select **Skip Criteria** in the Type field, select the task and enable **Business Day** and **Holiday**.


**Step 5** Click the **Save** button to save the record.

## Task Run Criteria Field Descriptions

The following table provides descriptions for each field in the Task Run Criteria Details.

Field Name	Description
Type	User-defined; indicates whether this is providing instructions on when to run or not run the task.  Options: <ul style="list-style-type: none"> <li>• <b>Run Criteria</b> - Provides instructions on when to run the task.</li> <li>• <b>Skip Criteria</b> - Provides instructions on when to skip the task.</li> </ul>
Task	User-defined; task for which you are specifying run or skip criteria. Select a task from the drop-down list of all tasks in this Workflow.
Vertex ID	Vertex ID of the task selected in the <b>Task</b> field. Each task within a Workflow has a unique Vertex ID, which distinguishes it from other tasks of the same name, if any.
Business Day	If enabled, the task runs or skips on all business days.
Holiday	If enabled, the task runs or skips on holidays.
Specific Day(s) – Sunday through Saturday	If enabled, the task runs or skips on the day(s) you select in the right-hand column.

<p>Custom Day</p>	<p>If enabled, the task runs or skips on the day you select in the <a href="#">Custom Day Choice</a> field.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      The <a href="#">calendar</a> used for the Workflow must contain the <a href="#">custom day</a> that you specify in the <a href="#">Custom Day Choice</a> field; otherwise, the task will not run or skip as expected on the custom day:</p> <ul style="list-style-type: none"> <li>If you launch a Workflow manually, the Workflow <a href="#">Default Calendar</a> is used. If a <a href="#">Default Calendar</a> is not specified, the <b>System Default</b> calendar is used.</li> <li>If you launch a Workflow using a trigger, the calendar specified in the trigger is used.</li> </ul> </div>
<p>Custom Day Choice</p>	<p>If <a href="#">Custom Day</a> is enabled, select the <a href="#">custom day</a> for which you are specifying run or skip criteria. Enter the name of an existing Custom Day, select a Custom Day from the drop-down list of all existing Custom Days, or click the De3tails icon to create a new Custom Day.</p> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>                      You cannot use a <a href="#">custom day</a> defined as a period as part of the task run criteria.</p> </div>
<p>Complex</p>	<p>If enabled, the task runs or skips on the day(s) indicated in the <a href="#">Adjective</a>, <a href="#">Noun</a>, and <a href="#">Qualifier</a> fields.</p>
<p>Adjective</p>	<p>If <a href="#">Complex</a> is enabled, you can use this field to specify which in a series of days you want to select. Used in conjunction with the <a href="#">Noun</a>, <a href="#">Qualifier</a>, and <a href="#">Nth Amount</a> (if <a href="#">Adjective</a> = Nth) fields. For example, to specify "the 15th business day of the month," select <a href="#">Adjective</a>: Nth, <a href="#">Noun</a>: Business Day, <a href="#">Qualifier</a>: Month, <a href="#">Nth Amount</a>: 15.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>Every</li> <li>1st</li> <li>2nd</li> <li>3rd</li> <li>4th</li> <li>Nth</li> <li>Last</li> </ul>
<p>Noun</p>	<p>If <a href="#">Complex</a> is enabled, you can use this field to specify the type of day you want to select. Used in conjunction with the <a href="#">Adjective</a>, <a href="#">Qualifier</a>, and <a href="#">Nth Amount</a> (if <a href="#">Adjective</a> = Nth) fields. For example, to specify "the 1st business day of the month," select <a href="#">Adjective</a> : 1st, <a href="#">Noun</a>: Business Day, <a href="#">Qualifier</a>: Month.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>Sunday through Saturday</li> <li>Day = any day</li> <li>Business Day = The business days specified in the calendar selected in the Workflow definition <a href="#">Default Calendar</a> field.</li> <li><a href="#">Custom Days</a> specified in the calendar selected in the Workflow definition <a href="#">Default Calendar</a> field.</li> </ul>
<p>Qualifier</p>	<p>If <a href="#">Complex</a> is enabled, you can use this field to specify the period for your selection formula. Used in conjunction with the <a href="#">Adjective</a>, <a href="#">Noun</a>, and <a href="#">Nth Amount</a> (if <a href="#">Adjective</a> = Nth) fields. For example, to specify "the 1st business day of the month," select <a href="#">Adjective</a>: 1st, <a href="#">Noun</a>: Business Day, <a href="#">Qualifier</a>: Month.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>Month</li> <li>Year</li> <li>January through December</li> <li>Custom Period (see <a href="#">Creating Custom Days</a>)</li> </ul>
<p>Nth Amount</p>	<p>If <a href="#">Adjective</a> = Nth; Sequential occurrence of the day selected in <a href="#">Noun</a> within the selected <a href="#">Qualifier</a>.</p>
<p>Variable</p>	<p>If enabled, instructs the Controller to run or not run the task, depending on the value of a specific variable. Used in conjunction with fields: <a href="#">Evaluate At</a>, <a href="#">Name</a>, <a href="#">Operator</a>, and <a href="#">Value</a>.</p>

Evaluate At	<p>If <b>Variable</b> = enabled; Allows you to specify when you want the Controller to evaluate the variable.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Trigger Time -- Evaluate the variable when the Workflow is triggered.</li> <li>• Run Time -- Evaluate the variable when the task is about to run.</li> </ul> <div style="background-color: #ffffcc; padding: 10px; margin-top: 10px;"> <p> <b>Note</b>  <b>Evaluate At</b> is applicable only to <b>Variable</b> criteria (it is hidden until the <b>Variable</b> field is enabled). <b>Evaluate At</b> has no impact on other criteria, which will resolve the same way whether the <b>Evaluate At</b> value is <b>Trigger Time</b> or <b>Run Time</b>; calendar-based criteria is always evaluated using the task instance <b>Trigger Time</b> (or the task instance <b>Created</b> time, if the workflow was launched manually).</p> </div>
Name	If <b>Variable</b> = enabled; Specifies the name of the variable being evaluated. The variable does not need to exist when this record is created.
Operator	If <b>Variable</b> = enabled; Allows you to select the operator to be used in the evaluation. Options: =, !=, >, >=, <, <=, <b>regex</b> (regular expression).
Value	If <b>Variable</b> = enabled; Allows you to specify the value or <b>regular expression</b> (up to 40 alphanumeric characters) that the Controller should look for when evaluating the variable.
<b>Buttons</b>	This section identifies the buttons displayed above and below the Task Run Criteria that let you perform various actions.
<b>Save</b>	Saves a new record in the Controller database.
<b>Update</b>	Saves updates to the record.
<b>New</b>	Displays empty (except for default values) Details for creating a new Database Connection.
<b>Delete</b>	Deletes the current record.
<b>Refresh</b>	Refreshes any dynamic data displayed in the Details.
<b>Close</b>	For pop-up view only; closes the pop-up view of this Database Connection.

## Specifying When a Workflow Runs

As with other task types, you can [run a Workflow manually](#) or [specify triggers](#) that run the Workflow task automatically based on times or events.

You also can specify [skip and run criteria](#) for specific tasks within the Workflow.

## Monitoring Workflow Execution

You can monitor all Controller activity from the [Activity Monitor](#).

## Modifying an Existing Workflow

<b>Step 1</b>	From the <b>Automation Center</b> navigation pane, select <b>Tasks &gt; Workflow Tasks</b> . The <a href="#">Workflow Tasks list</a> displays.
<b>Step 2</b>	Click the Task Name of the Workflow task that you want to modify. Workflow Task Details for that task displays.
<b>Step 3</b>	Click <b>Edit Workflow</b> to display the <a href="#">Workflow Editor</a> .
<b>Step 4</b>	Modify the Workflow and click the <a href="#">Save</a> icon.

## Deleting a Workflow

<b>Step 1</b>	From the <b>Automation Center</b> navigation pane, select <b>Tasks &gt; Workflow Tasks</b> . The <a href="#">Workflow Tasks list</a> displays.
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<b>Step 2</b>	Right-click the Workflow that you want to delete to display an <b>Action menu</b> . (If you want to delete multiple Workflows, use <b>Ctrl+click</b> to select each one and then right-click any of the selected Workflows.)
<b>Step 3</b>	Click <b>Delete</b> .

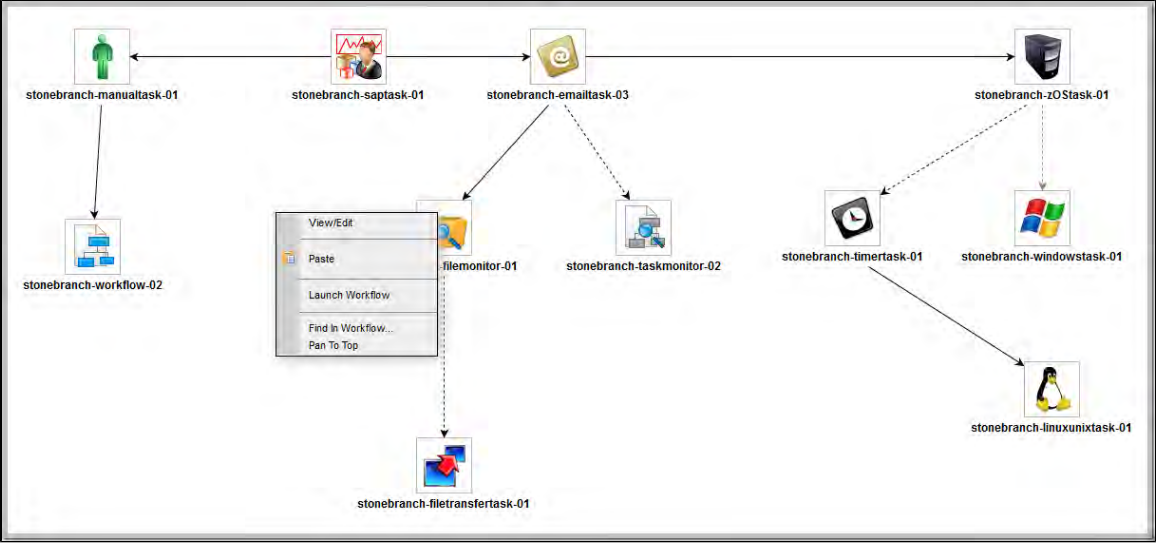
## Finding a Task in a Workflow

For any Workflow task, or any Workflow task instance (running or complete), you can find the location of any task (or multiple tasks) within that Workflow:

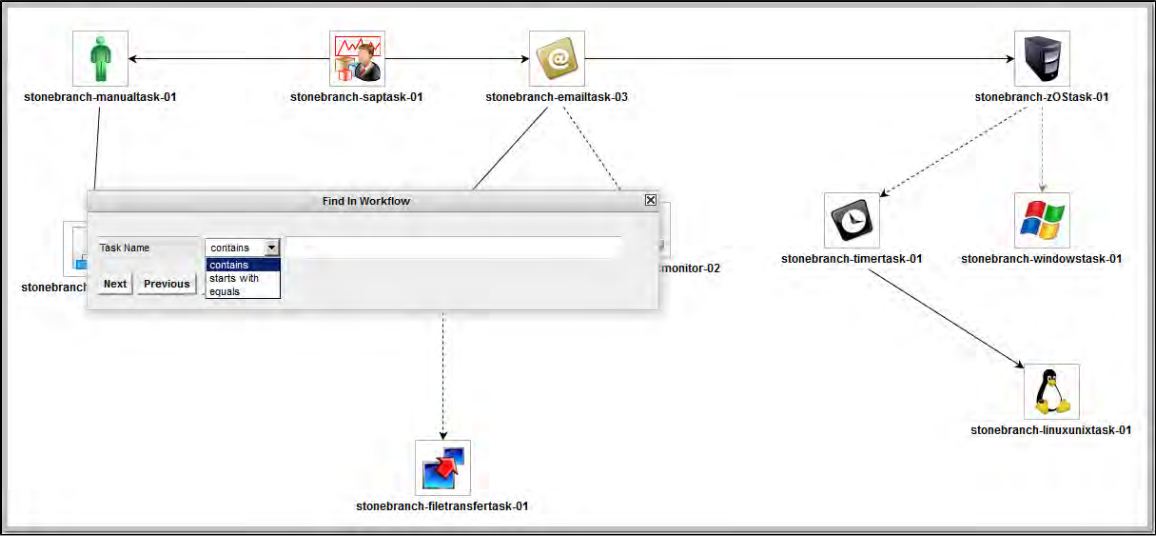
**Step 1** On the **Workflow Tasks** list, right-click a Workflow task to display an **Action menu**.

**Step 2** Click **Edit Workflow** to display the **Workflow Editor** for that Workflow.

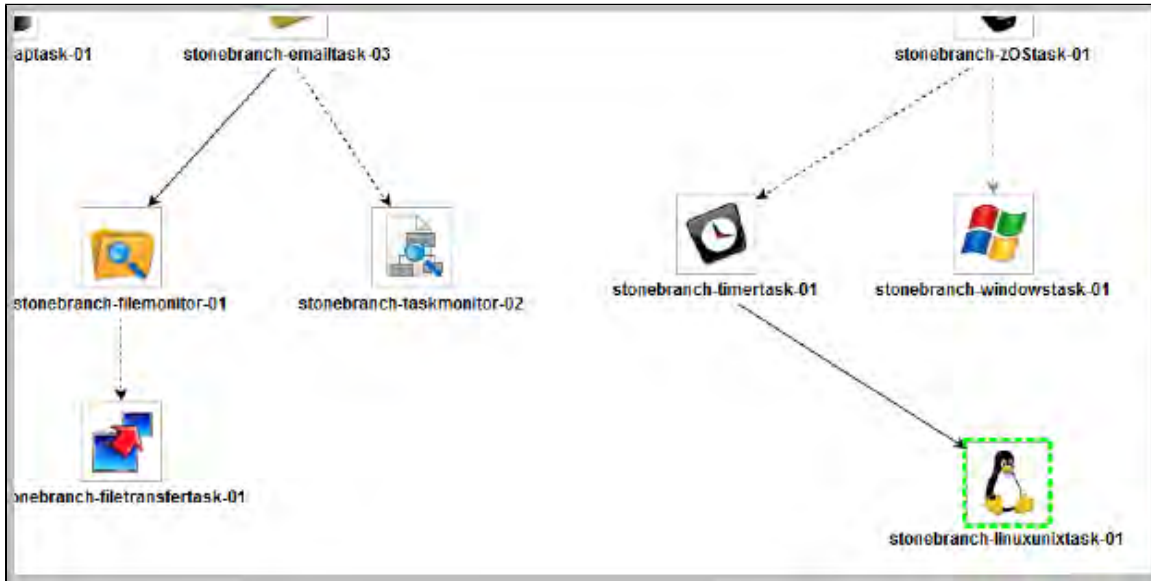
**Step 3** Right-click in the Workflow Editor canvas. A pop-up menu displays.



**Step 4** Click **Find in Workflow...** to display a Find in Workflow dialog.



**Step 5** Select an operator for the search (**contains**, **starts with**, or **equals**), enter the full or partial name of the task(s) that you want to find, and click OK. The Controller locates and displays the first task within the Workflow that matches the search criteria. Click the **Next** and/or **Previous** buttons to find any other tasks that match the search criteria.



**Note**  
You also can locate a task in a Workflow by using the [Pan](#) tool.

### Workflow Coordinates

If you use [Find in Workflow...](#) (or [Pan mode](#)) to view different areas of a Workflow, the Controller preserves the coordinates of the last area that you viewed. If you leave the Workflow and return to it in the same browser session, the last viewed area of the Workflow displays.

To restore the displayed Workflow to its default, top-left position, you can either:

- Right-click any white space in the Workflow canvas to display a [pop-up menu](#) and click **Pan To Top**.
- Start a new browser session.

### Viewing a Task Instance in a Workflow from the Activity Monitor or Task Instances List

From the Activity Monitor or Task Instances list, you can view the location and status of a task instance in a Workflow.

<b>Step 1</b>	Open the <a href="#">Activity Monitor</a> or <a href="#">Task Instances List</a> .
<b>Step 2</b>	Right-click a task instance to display the <a href="#">Action</a> menu.
<b>Step 3</b>	Click <b>View in Workflow</b> . The parent Workflow of the selected task instance displays, with that task instance highlighted.

**Note**  
You also can view any predecessor or successor task instance of a task instance in a Workflow from the [View Predecessors/Successors](#) pop-up dialog.

### Inserting a Task in an Active Workflow

After a Workflow has been launched, you can insert a new task (except a Workflow task) into an active Workflow instance.

You can insert the task as a predecessor or successor of another task instance within the Workflow instance using the [Insert Task](#) as

[Predecessor](#) or [Insert Task as Successor](#) command, respectively. Alternatively, you can use the [Insert Task...](#) command to insert a task with any number of predecessors and successors.

## Insert Task as Predecessor

<b>Step 1</b>	In the Workflow Monitor, right-click a task instance.
<b>Step 2</b>	Click <b>Insert Task As Predecessor....</b> The Task Insert > Task Selection dialog displays.
<b>Step 3</b>	<p>Find the task you want to insert (see <a href="#">Searching For and Adding Tasks</a>) and drag the task's icon onto the Workflow canvas where you would like it to be inserted.</p> <p>The Controller inserts the task as a predecessor to the selected task instance, and the inserted task will start to run when all of its dependencies (for example, virtual resources) have been met. If the selected task instance had not already started, it will wait until the inserted task completes and all of its other dependencies have been satisfied.</p>

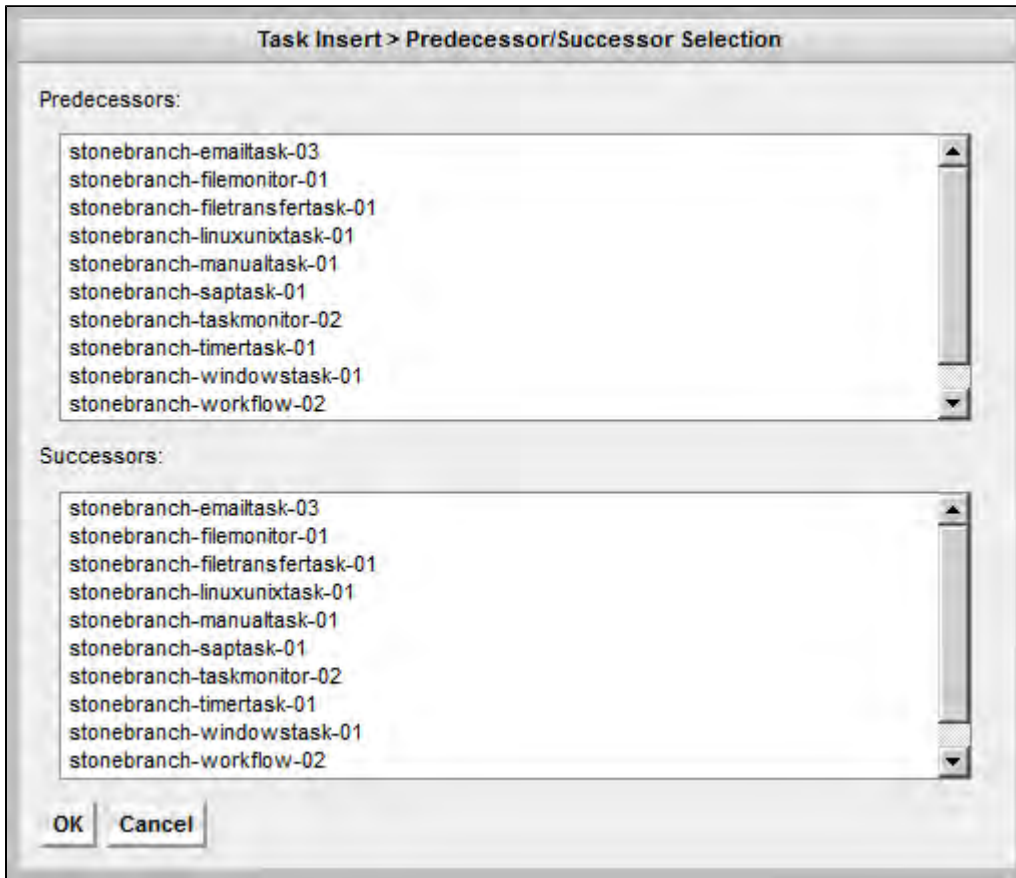
## Insert Task as Successor

<b>Step 1</b>	In the Workflow Monitor, right-click a task instance.
<b>Step 2</b>	Click <b>Insert Task As Successor....</b> The Task Insert > Task Selection dialog displays.
<b>Step 3</b>	<p>Find the task you want to insert (see <a href="#">Searching For and Adding Tasks</a>) and drag the task's icon onto the Workflow canvas where you would like it to be inserted.</p> <p>The Controller inserts the task as a successor to the selected task instance. When the selected task instance completes, the inserted task will start to run, assuming that all of its dependencies (for example virtual resources) have been met.</p>

## Insert Task with Multiple Predecessors/Successors

<b>Step 1</b>	In the Workflow Monitor, right-click any white space in the Workflow canvas.
<b>Step 2</b>	Click <b>Insert Task....</b> The Task Insert > Task Selection dialog displays.
<b>Step 3</b>	Find the task you want to insert (see <a href="#">Searching For and Adding Tasks</a> ) and drag the task's icon onto the Workflow canvas where you would like it to be inserted.

**Step 4** The Task Insert > Predecessor/Successor Selection dialog displays.



**Step 5** Select zero or more predecessors and zero or more Successors, and then click **OK**.

The Controller inserts the task as a successor to the selected predecessor task instance(s) and as a predecessor to the selected successor task instance(s).

- When the selected predecessor task instances complete, the inserted task will start to run, assuming that all of its dependencies (for example, virtual resources) have been met.
- If the selected successor task instances had not already started, they will wait until the inserted task completes and all of their other dependencies have been satisfied.



**Note**

Any predecessor task that is in a SUCCESS, FINISHED, or SKIPPED status will not prevent the inserted task from running.

## Viewing Task Predecessors / Successors

You can view all predecessors and successors of a task (or task instance) in a Workflow from:

- Activity Monitor
- Task Instances list
- Workflow Editor
- Workflow Monitor

You also can view all predecessors and successors of all tasks (or task instances) in a Workflow from:

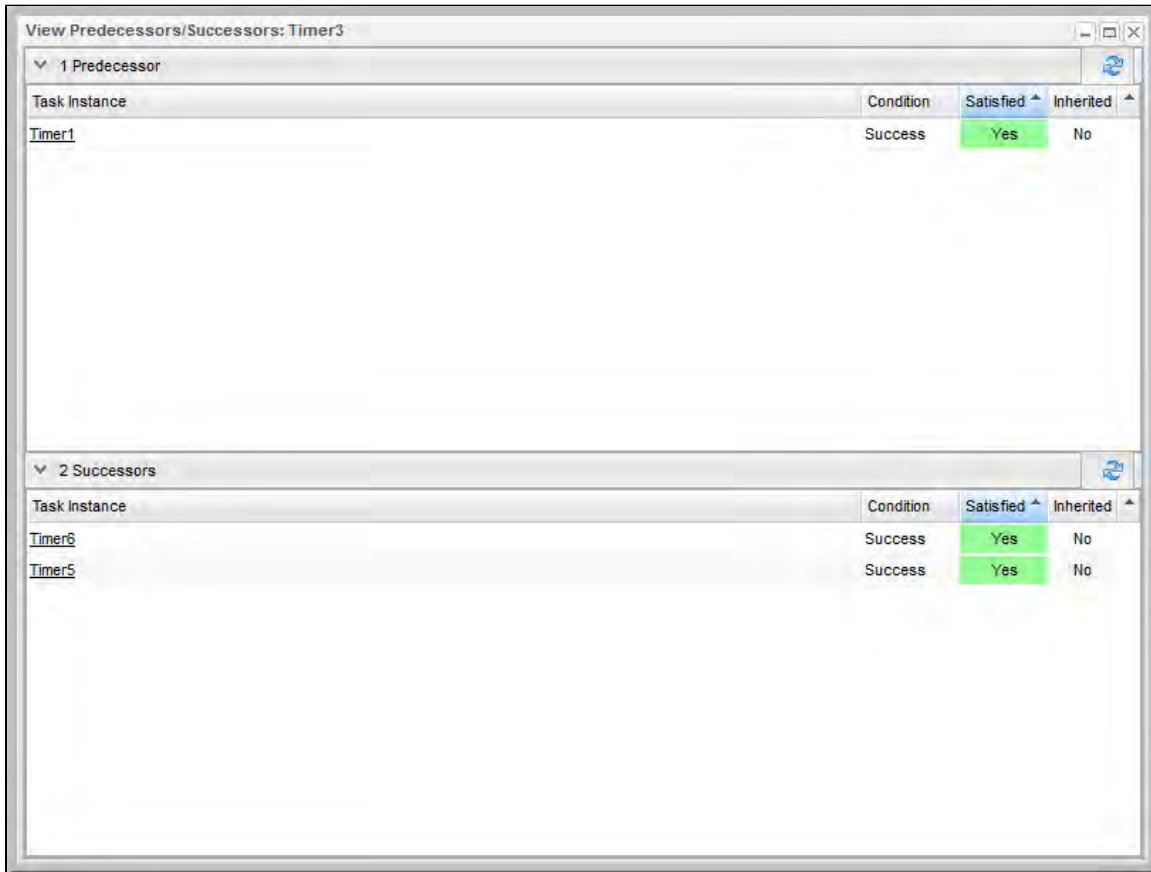
- Workflows list
- Workflow task Details
- Activity Monitor
- Task Instances list
- Workflow task instance Details

## Viewing Predecessors/Successors of a Single Task Instance from the Activity Monitor or Task Instances List

**Step 1** Display the [Activity Monitor](#) or [Task Instances List](#).

**Step 2** Right-click a task instance to display an [Action menu](#).

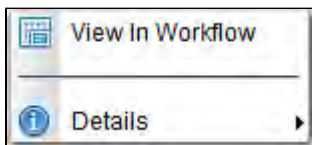
**Step 3** Click **View Predecessors/Successors** to display the View Predecessors/Successors pop-up dialog.



The View Predecessors/Successors pop-up dialog provides separate lists of all predecessor and successor task instances of the selected task instance in the Workflow, and status information for each of the predecessor/successor dependencies.

**Step 4** If you want to view the task instance Details of any predecessor or successor task instance, click that task instance.

**Step 5** If you want to view a predecessor or successor task instance of the selected task instance within the Workflow, right-click that task instance to display an [Action menu](#), and then click **View Workflow**.



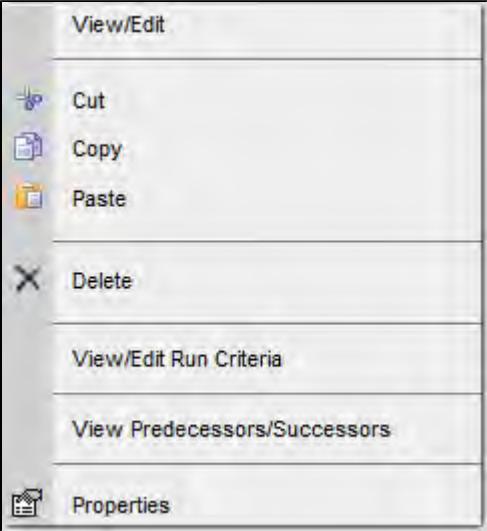
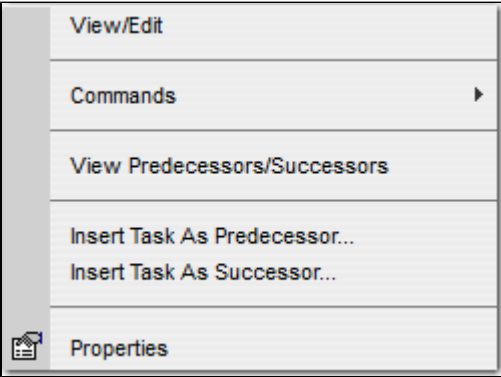
The parent Workflow of the selected task instance displays, with the selected predecessor or successor task instance highlighted.

## Viewing Predecessors / Successors of a Single Task/Task Instance from the Workflow Editor/Workflow Monitor

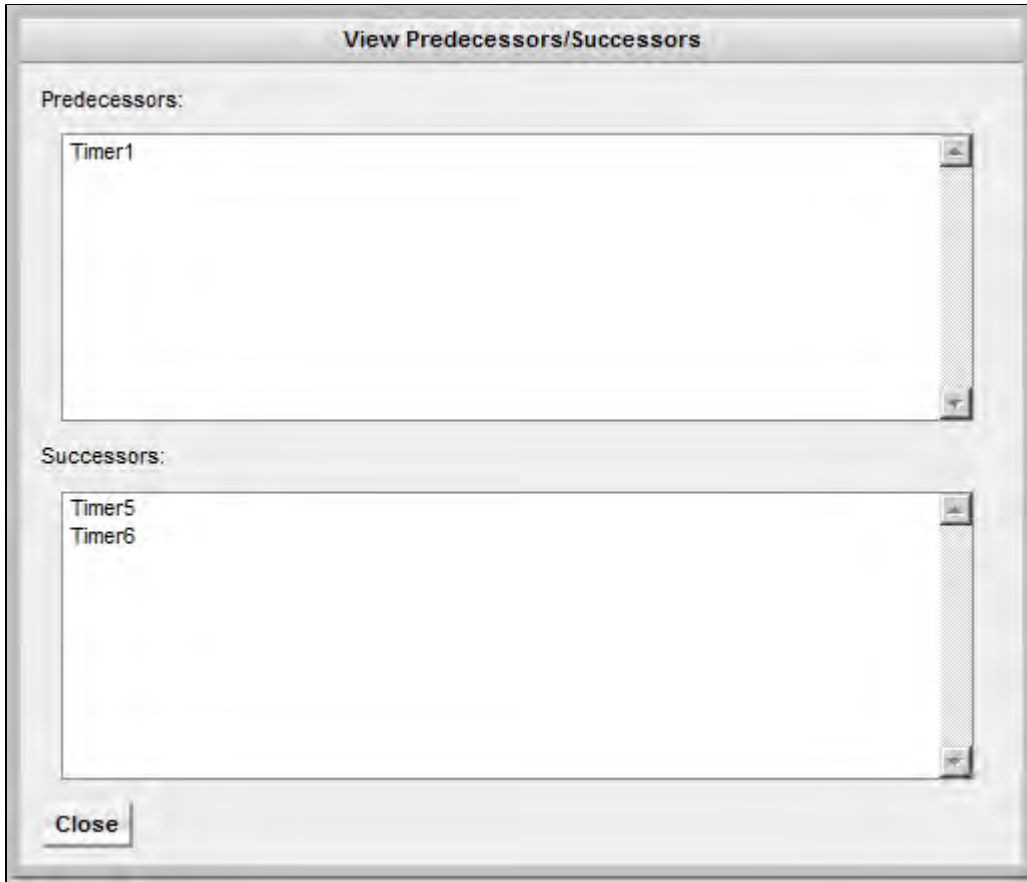


**Note**

To view more detailed task instance predecessor/successor information from the Workflow Monitor than is available via this procedure, see [Viewing Detailed Status of Task Instance Predecessors / Successors from Workflow Monitor](#), below.

<b>Step 1</b>	Open the Workflow Editor or Workflow Monitor.
<b>Step 2</b>	<p>Right-click a task to display an <a href="#">Action menu</a>. (The menus are different for a task in a Workflow Editor and a task instance in a Workflow Monitor.)</p> <p><b>Workflow Editor Menu</b></p>  <p><b>Workflow Monitor Menu</b></p> 

**Step 3** Right-click **View Predecessors/Successors** to display the View Predecessors/Successors pop-up.



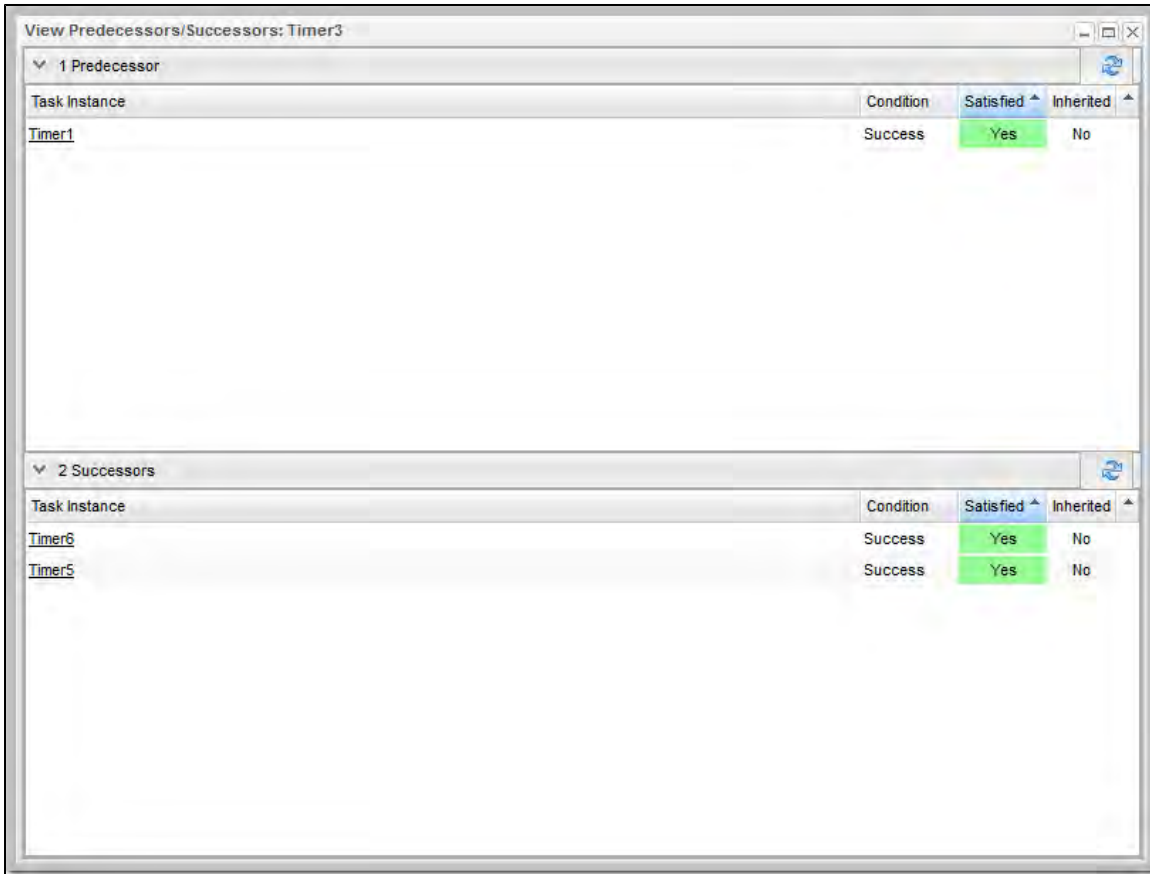
The View Predecessors/Successors pop-up provides separate lists of all predecessor and successor task/task instances of the selected task/task instance in the Workflow.

- Click a task in either list to select and center it within the Workflow Editor / Monitor display.
- Double-click a task in either list to select and center it within the Workflow Editor / Monitor display and close the View Predecessors/Successors pop-up.

## Viewing Detailed Status of Predecessors / Successors of a Single Task Instance from Workflow Monitor

<b>Step 1</b>	Open the Workflow Monitor.
<b>Step 2</b>	Double-click a task instance, or right-click and select <b>View/Edit</b> , to see its Task Instance Details.
<b>Step 3</b>	Right-click in the Task Instance Details to display an <a href="#">Action menu</a> .

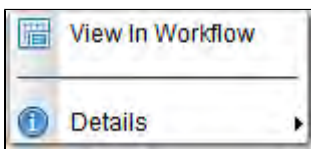
**Step 4** Click **View Predecessors/Successors** to display a detailed view of the View Predecessors/Successors pop-up dialog.



The View Predecessors/Successors pop-up dialog provides separate lists of all predecessor and successor task instances of the selected task instance in the Workflow, and status information for each of the predecessor/successor dependencies.

**Step 5** If you want to view the task instance Details of any predecessor or successor task instance, click that task instance.

**Step 6** If you want to view a predecessor or successor task instance of the selected task instance within the Workflow, right-click that task instance to display an **Action menu**, and then click **View Workflow**.



The parent Workflow of the selected task instance displays, with the selected predecessor or successor task instance highlighted.

## Viewing Predecessors/Successors of All Tasks in a Workflow Task

You can view the predecessors/successors of all tasks in a Workflow task from:

- Workflow task on Workflows list
- Workflow task Details

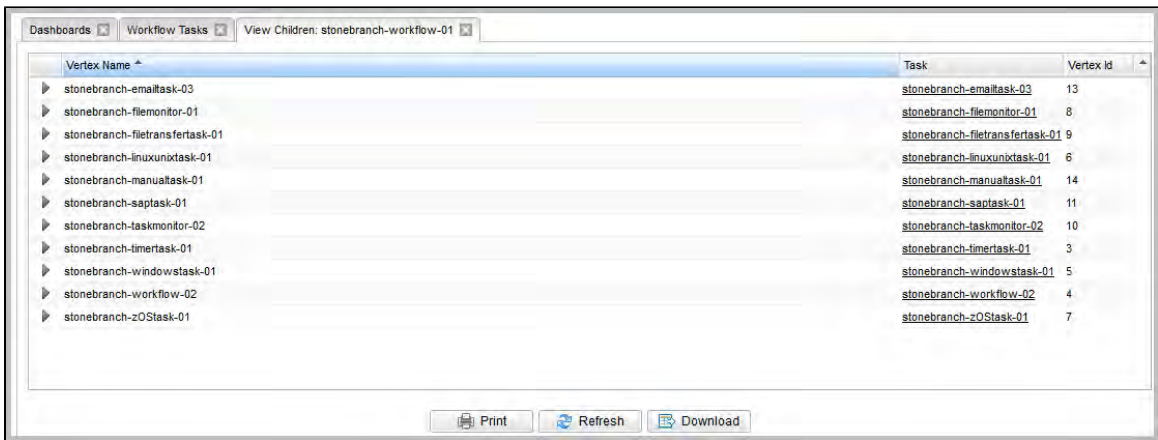
Viewing predecessors/successors of all tasks in a Workflow task also lets you:


- View task run criteria for all tasks in the Workflow.
- View and/or download a list of predecessors/successors and task run criteria for all tasks in the Workflow.

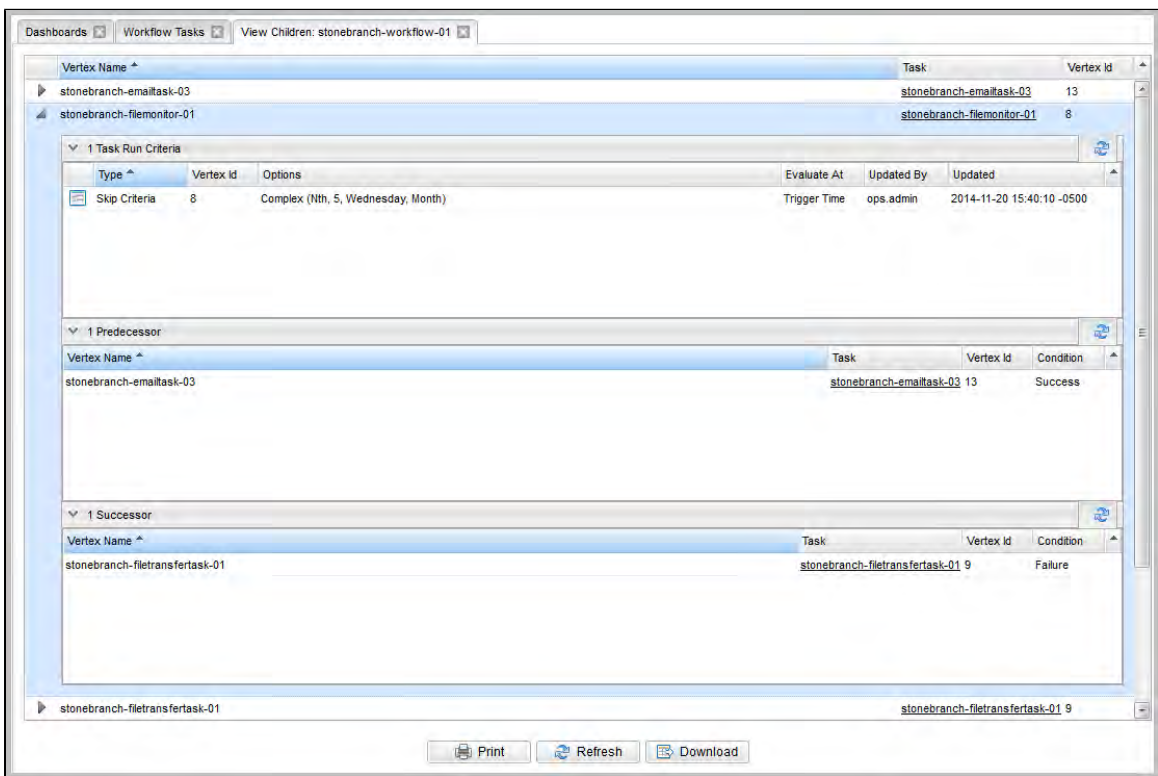
**Step 1** Display the [Workflows List](#).



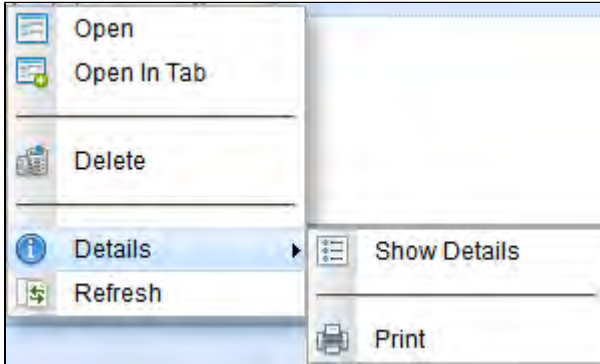
**Step 2** Right-click a Workflow on the list and select **View Children** from the **Action** menu, or right-click within the task Details for the Workflow and select **View Children**. A list of child tasks within that Workflow displays.



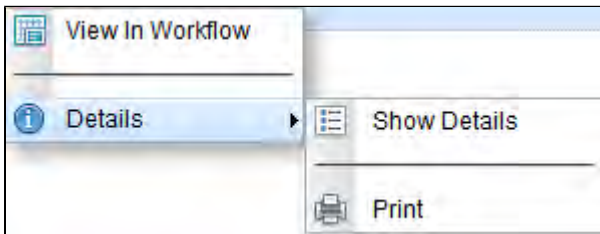
**Step 3** Click the Expand icon (  ) next to any child task to display additional content for that child task, including Task Run Criteria, Predecessors, and Successors.



**Step 4** For any Task Run Criteria on the list, click the Details icon to displays its record Details, or right-click it to display a menu of options available for that Task Run Criteria.



**Step 5** For any Predecessor / Successor on the list, right-click it to display a menu of options available for that predecessor/successor.



**Step 6** To view and/or save a list of all predecessors/successors and task run criteria for all child tasks within the Workflow, click the **Download** button on the View Children list.

```

stonebranch-workflow-01 {Number Of Tasks=11}

stonebranch-emailtask-03 {Vertex Id=13}
  1 Predecessor
    stonebranch-saptask-01 {Vertex Id=11, Condition=Success}
  3 Successors
    stonebranch-filemonitor-01 {Vertex Id=8, Condition=Success}
    stonebranch-taskmonitor-02 {Vertex Id=10, Condition=Success/Failure}
    stonebranch-zOstask-01 {Vertex Id=7, Condition=Success}

stonebranch-filemonitor-01 {Vertex Id=8}
  1 Task Run Criteria
    Complex (Nth, 5, Wednesday, Month) {Type=Skip Criteria, Vertex Id=8, Evaluate At=Trigger Time}
  1 Predecessor
    stonebranch-emailtask-03 {Vertex Id=13, Condition=Success}
  1 Successor
    stonebranch-filetransfertask-01 {Vertex Id=9, Condition=Failure}

stonebranch-filetransfertask-01 {Vertex Id=9}
  1 Predecessor
    stonebranch-filemonitor-01 {Vertex Id=8, Condition=Failure}

stonebranch-linuxunixtask-01 {Vertex Id=6}
  1 Predecessor
    stonebranch-timertask-01 {Vertex Id=3, Condition=Success}

stonebranch-manualtask-01 {Vertex Id=14}
  1 Predecessor
    stonebranch-saptask-01 {Vertex Id=11, Condition=Success}
  1 Successor
    stonebranch-workflow-02 {Vertex Id=4, Condition=Success}

stonebranch-saptask-01 {Vertex Id=11}
  2 Successors
    stonebranch-emailtask-03 {Vertex Id=13, Condition=Success}
    stonebranch-manualtask-01 {Vertex Id=14, Condition=Success}

stonebranch-taskmonitor-02 {Vertex Id=10}
  1 Predecessor
    stonebranch-emailtask-03 {Vertex Id=13, Condition=Success/Failure}

stonebranch-timertask-01 {Vertex Id=3}
  1 Predecessor
    stonebranch-zOstask-01 {Vertex Id=7, Condition=Exit Code(s): 20}
  1 Successor
    stonebranch-linuxunixtask-01 {Vertex Id=6, Condition=Success}

stonebranch-windowstask-01 {Vertex Id=5}
  1 Predecessor
    stonebranch-zOstask-01 {Vertex Id=7, Condition=Step Condition(s): STEP2:PS1:USAP:220}

stonebranch-workflow-02 {Vertex Id=4}
  1 Predecessor
    stonebranch-manualtask-01 {Vertex Id=14, Condition=Success}

stonebranch-zOstask-01 {Vertex Id=7}
  1 Predecessor
    stonebranch-emailtask-03 {Vertex Id=13, Condition=Success}

```

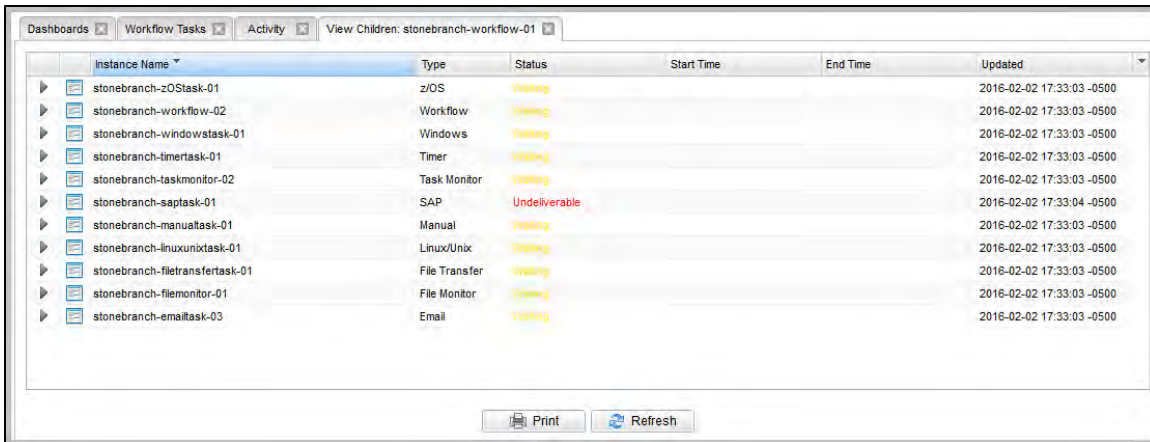
	<p>2 Successors</p> <p>stonebranch-timertask-01 {Vertex Id=3, Condition=Exit Code(s): 20}</p> <p>stonebranch-windowtask-01 {Vertex Id=5, Condition=Step Condition(s): STEP2:PS1:USAP:220}</p>
<b>Step 7</b>	To print all currently displayed information on the list, click the <b>Print</b> button.
<b>Step 8</b>	To refresh all information on the list, click the <b>Refresh</b> button.

## Viewing Predecessors/Successors of All Task Instances in a Workflow Task Instance

You can view the predecessors/successors of all task instances in a Workflow task instance from:

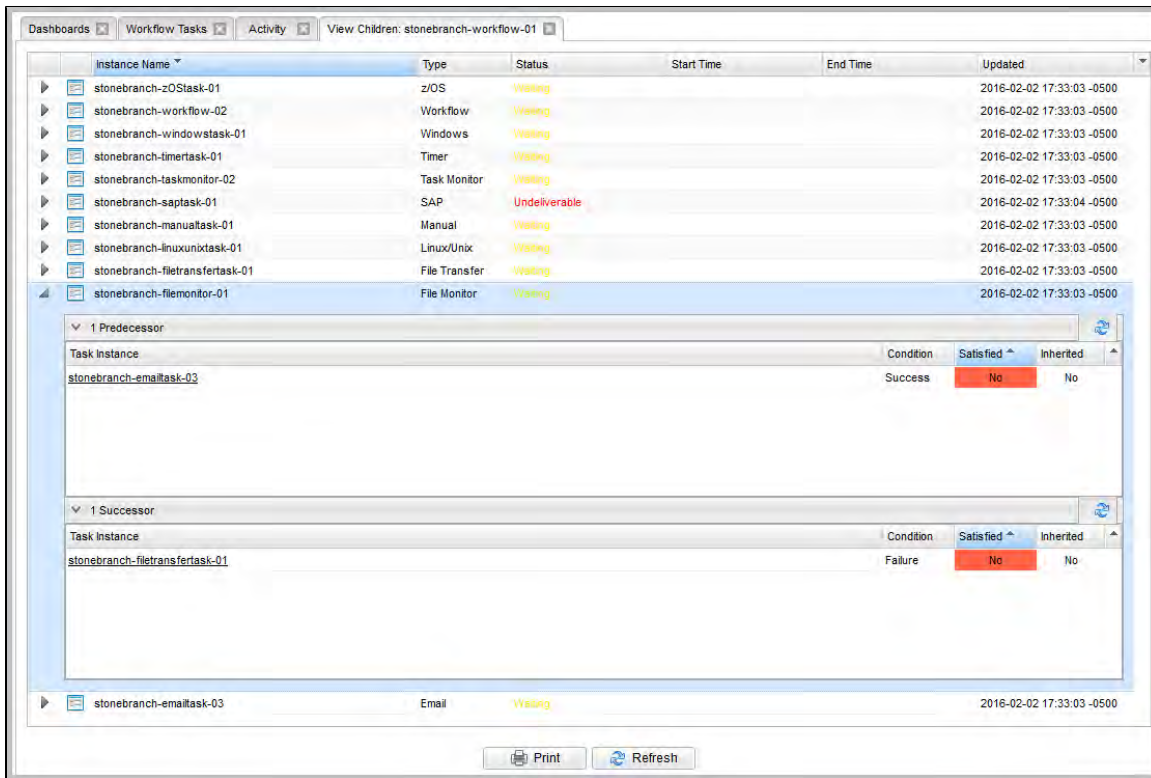
- Activity Monitor
- Task Instances list
- Workflow task instance Details

<b>Step 1</b>	Display the <a href="#">Activity Monitor</a> or <a href="#">Task Instances list</a> .
<b>Step 2</b>	Right-click a Workflow on the Activity Monitor or Task Instance list, or <a href="#">open</a> a Workflow on the Activity Monitor or Task Instance list and then right-click within that Workflow Details, to display an <a href="#">Action menu</a> .
<b>Step 3</b>	Select <b>Workflow Task Commands &gt; View Children</b> to display a list of child task instances within that Workflow.



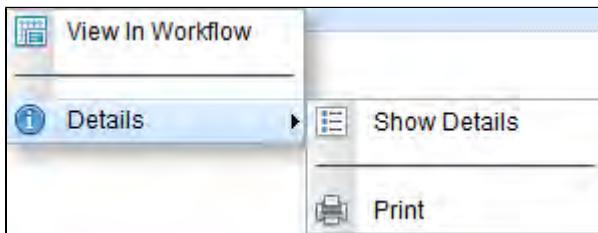
**Step 4**

Click the Expand icon ( ▶ ) next to any child task instance to display additional content for that child task instance, including Predecessors and Successors.



**Step 5**

For any Predecessor / Successor on the list, right-click it to display a menu of options available for that predecessor/successor.



**Step 6**

To print all currently displayed information on the list, click the **Print** button.

**Step 7**

To refresh all information on the list, click the **Refresh** button.

## Forecasting a Workflow for a Specific Date/Time

You can display forecast information for a Workflow for a specific date and time. This provides a view of how a Workflow will look based on the Run/Skip Criteria for that date and time.

You can forecast a Workflow, without requiring a Trigger or Trigger forecast data, for any date/time within a span of five years in the past and 10 years in the future.

**Step 1**

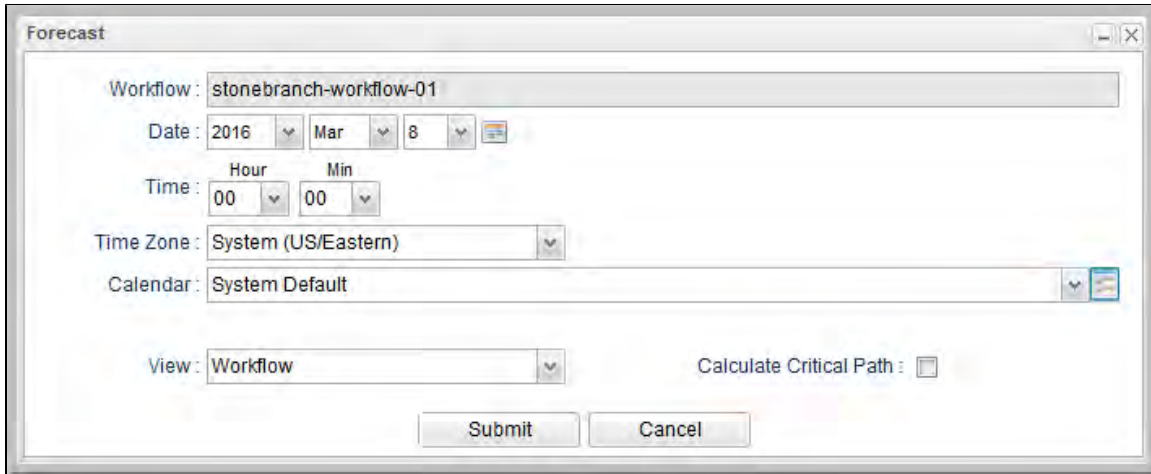
From the **Automation Center** navigation pane, select **Tasks > All Tasks** or **Tasks > Workflow Tasks**.

**Step 2**

Display an **Action** menu either of three ways:

- Right-click the Workflow in the **All Tasks** or **Workflow Tasks** list.
- Open the Workflow and right-click in the Details.
- Open the Workflow, click the Triggers tab, and right-click a Trigger on the list.

**Step 3** Click **Forecast...** to display a Forecast dialog.



**Step 4** Select a Date, Time, Time Zone, and Calendar for when you want to forecast the Workflow (and all of its sub-Workflows, if any).

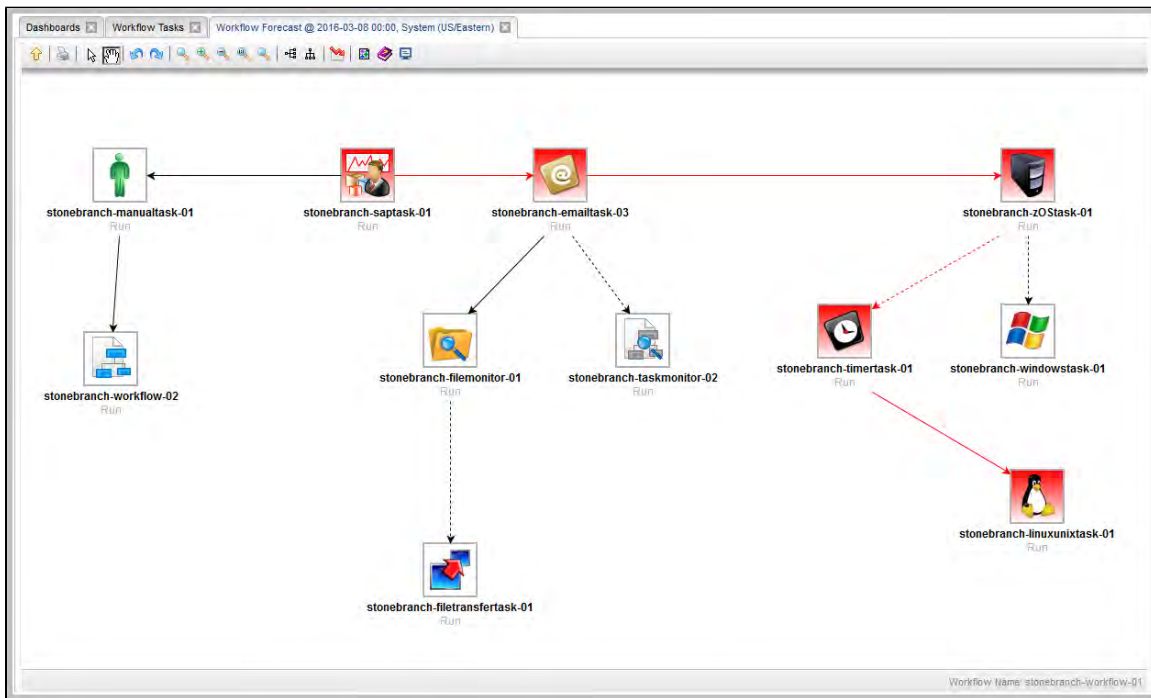
- If you selected Forecast from the **All Tasks** list, **Workflow Tasks** list, or Workflow Details, the default Calendar of the Workflow displays.
- If you selected Forecast from the Triggers tab list, the default Calendar of the selected Trigger displays.

**Step 5** Select a **View** in which you want to display the Forecast: **Workflow** or **List**.

**Step 6** If you selected **Workflow View**, a **Calculate Critical Path** field displays. Enable/disable this field depending on whether or not you want to calculate the **Critical Path** of the Workflow.

**Step 7** Click **Submit** to display the Forecast in the selected View.

**Workflow View**



In the Workflow View, each task has a Run Criteria evaluation label:

- Run - Task border is gray and solid.
- Skip - Task border is red and solid.
- Not Evaluated - Task border is gray and dotted. (Run/skip criteria for this task is dependent on variable resolution; could not be evaluated.)

If you enabled **Calculate Critical Path**:

- Task instances and connectors in the Critical Path display in the color specified by the [Critical Path Color](#) system property.
- Run/skip criteria is resolved based upon the date specified in the Forecast option.



**Note**

You can choose to [show or hide skipped tasks](#) in the Workflow View of the Forecast just as you can on a Workflow Monitor.

If **Calculate Critical Path** is enabled, skipped task instances are hidden, and the Show Skipped/Restore and Hide Skipped context-menu items are not available.

If **Calculate Critical Path** is enabled, but you want to see skipped task instances, you can restore the standard view by clicking the [Toggle Critical Path View](#) icon in the Workflow Forecast toolbar (see [Workflow Editor Toolbar](#) for a description of the tools in this toolbar).

The Workflow View lets you navigate into sub-Workflows (by double-clicking them) and back to the parent Workflow (via the [Go to Parent](#) icon).

**List View**

Task ^ 4	Task Type ^ 3	Workflow ^ 2	Launch Time ^ 1	End Time	Run Criteria Evaluation
<a href="#">stonebranch-workflow-01</a>	Workflow		2014-11-12 12:00:00 -0500	2014-11-12 12:00:00 -0500	Run
<a href="#">stonebranch-timertask-01</a>	Timer	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:00:00 -0500	2014-11-12 12:00:00 -0500	Run
<a href="#">stonebranch-windowstask-01</a>	Windows	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:00:00 -0500	2014-11-12 12:00:00 -0500	Run
<a href="#">stonebranch-linuxunixtask-01</a>	Linux/Unix	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:00:00 -0500	2014-11-12 12:00:00 -0500	Run
<a href="#">stonebranch-zOSTask-01</a>	z/OS	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:00:00 -0500	2014-11-12 12:00:00 -0500	Run
<a href="#">stonebranch-filemonitor-01</a>	File Monitor	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:00:00 -0500	2014-11-12 12:00:00 -0500	Skip
<a href="#">stonebranch-filetransfertask-01</a>	File Transfer	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:00:00 -0500	2014-11-12 12:00:00 -0500	Run
<a href="#">stonebranch-saptask-01</a>	SAP	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:00:00 -0500	2014-11-12 12:00:00 -0500	Run
<a href="#">stonebranch-manualtask-01</a>	Manual	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:04:00 -0500	2014-11-12 12:04:00 -0500	Run
<a href="#">stonebranch-emailtask-03</a>	Email	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:04:00 -0500	2014-11-12 12:04:00 -0500	Run
<a href="#">stonebranch-taskmonitor-02</a>	Task Monitor	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:04:01 -0500	2014-11-12 12:04:01 -0500	Run
<a href="#">stonebranch-workflow-02</a>	Workflow	<a href="#">stonebranch-workflow-01</a>	2014-11-12 12:04:33 -0500	2014-11-12 12:04:33 -0500	Run

The List View displays forecast data for the Workflow and all of its tasks, including all sub-Workflows and their tasks.

## Modifying Tasks in a Workflow

You can make the following modifications for tasks in a Workflow:

- [Changing the Priority of a Task Instance](#)
- [Re-running a Task Instance](#)
- [Cancelling a Task Instance](#)
- [Force Finishing a Task Instance](#)
- [Putting a Task Instance on Hold](#)
- [Releasing a Task Instance from Hold](#)
- [Skipping a Task Instance](#)
- [Showing or Hiding Skipped Task Instances](#)
- [Unskipping a Task Instance](#)
- [Clearing All Predecessor Dependencies for a Task Instance](#)
- [Marking a Task Instance Dependency as Satisfied](#)

## Monitoring Task Activity

Universal Controller lets you perform the following actions related to the monitoring of tasks and Workflows:

- [Monitoring Activity from the Activity Monitor](#)
- [Monitoring Activity from the Task Instances List](#)
- [Monitoring Activity History](#)
- [Monitoring Workflows](#)
- [Viewing Task Instances for a Specific Task](#)
- [Displaying Task Instance Status](#)
- [Retrieving Output](#)



## Monitoring Activity from the Activity Monitor

- Overview
- Accessing the Activity Monitor
- Activity Monitor Column Descriptions
- Activity Monitor Task Bar
  - Time Constraint
  - Quick Filter
  - Custom Filter
  - Refresh
- Activity Monitor Display Task Bar
  - Settings
  - Start and Stop Activity Monitor
  - Page Navigation Buttons
  - Page Numbers
- Displaying Task Instance Details
- Issuing Commands Against Task Instances

### Overview

The Activity Monitor is the Universal Controller central console of activity, a real-time display of task instance status. It displays a list of task instances contained in the Universal Controller [All Task Instances](#) table (`ops_exec`), as controlled by your selections in the [Activity Monitor Selections](#) task bar at the top of the list.

A task bar below the list allows you to control displays settings for the selected task instances.

A task instance is the "run" version of a task. Each time a task runs, the Controller creates a task instance and monitors its activity on the Activity Monitor. Each task instance is a separate record.

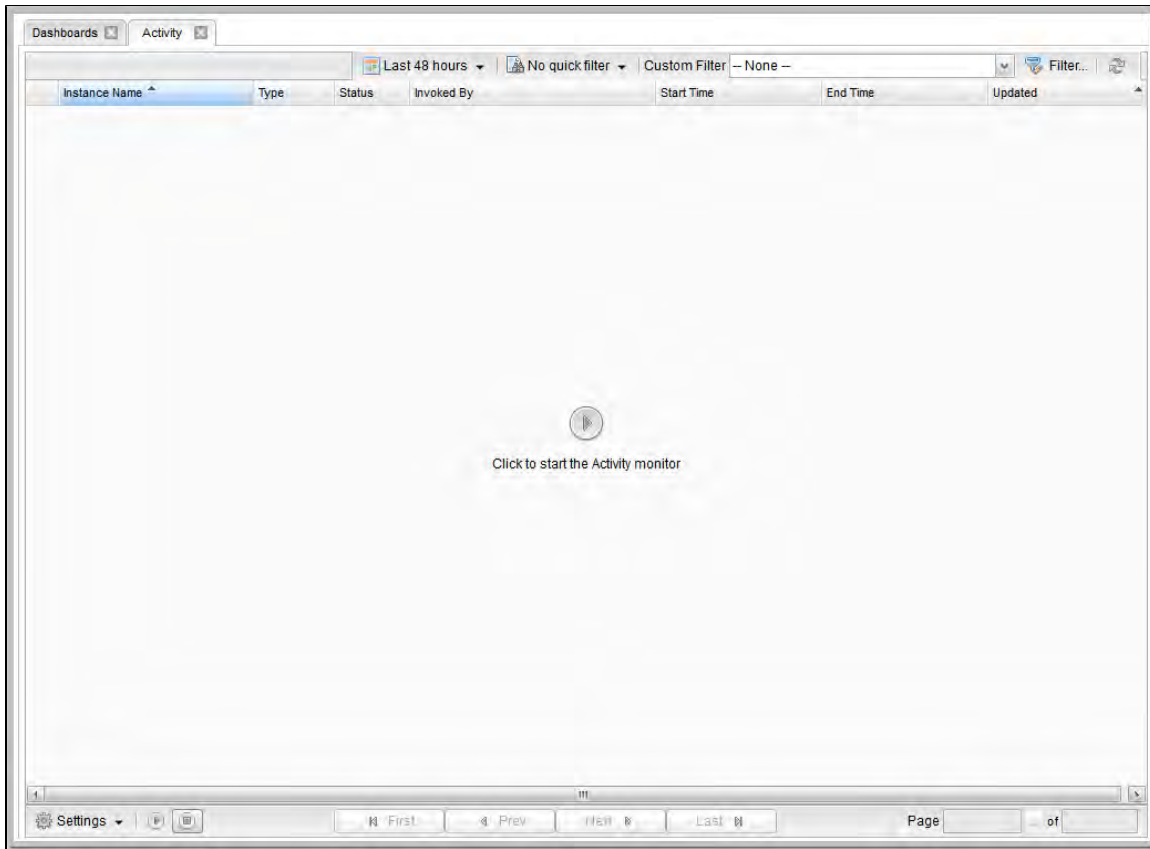
The Activity Monitor allows you to [issue commands against task instances](#). You can also issue commands from the [Task Instances](#) list (and the [Task Instances list for a specific task](#)). In cases where the task Details did not instruct the Controller to retrieve output automatically, you can retrieve output manually from any completed task.

### Accessing the Activity Monitor

From the [Automation Center](#) navigation pane, select **Task Instances > Activity**. The Activity Monitor displays task status information based on the settings in the [Activity Monitor Selections Task Bar](#).

When you first log in to the Controller, the Activity Monitor does not automatically monitor Controller activity, since the [Activity Monitor Automatically](#) user preference value, by default, is set to **No**. You can change this value at any time.

The following is a sample Activity Monitor that is not monitoring activity.



You can manually start the Activity Monitor at any time by clicking the Start button in the center of the screen. You also can [manually start or stop the Activity Monitor at any time](#) from the [Activity Monitor Display](#) task bar. However, on your next login to the Controller, the [Activity Monitor Automatically](#) value will determine whether or not the Activity Monitor automatically starts monitoring the Controller.

The following is a sample Activity Monitor that is monitoring activity.

Instance Name	Type	Status	Invoked By	Start Time	End Time	Updated
lecu-wkfl-sleep	Workflow	Success	Manually Launched	2014-09-02 12:57:55 -0400	2014-09-02 12:58:36 -0400	2014-09-02 12:58:36 -0400
sleep 10	Timer	Success	Workflow: lecu-wkfl-sleep	2014-09-02 12:58:26 -0400	2014-09-02 12:58:36 -0400	2014-09-02 12:58:36 -0400
Sleep 30	Timer	Success	Workflow: lecu-wkfl-sleep	2014-09-02 12:57:56 -0400	2014-09-02 12:58:26 -0400	2014-09-02 12:58:26 -0400
Sleep 0	Timer	Success	Workflow: lecu-wkfl-sleep	2014-09-02 12:57:56 -0400	2014-09-02 12:57:56 -0400	2014-09-02 12:57:56 -0400
Sleep 60	Timer	Skipped	Workflow: lecu-wkfl-sleep		2014-09-02 12:57:55 -0400	2014-09-02 12:57:55 -0400
Sleep 60	Timer	Skipped	Workflow: lecu-wkfl-sleep		2014-09-02 12:57:55 -0400	2014-09-02 12:57:55 -0400
Sleep 60	Timer	Skipped	Workflow: lecu-wkfl-sleep		2014-09-02 12:57:55 -0400	2014-09-02 12:57:55 -0400
Sleep 30	Timer	Skipped	Workflow: lecu-wkfl-sleep		2014-09-02 12:57:55 -0400	2014-09-02 12:57:55 -0400
Sleep 30	Timer	Skipped	Workflow: lecu-wkfl-sleep		2014-09-02 12:57:55 -0400	2014-09-02 12:57:55 -0400
win-exit-code	Windows	Failed	Manually Launched	2014-09-02 12:44:03 -0400	2014-09-02 12:44:03 -0400	2014-09-02 12:44:03 -0400
zos-workflow-regression-test	Workflow	Success	Manually Launched	2014-09-02 11:52:47 -0400	2014-09-02 12:10:30 -0400	2014-09-02 12:10:30 -0400
zos-workflow-simple-load-test-01	Workflow	Success	Workflow: zos-workflow-regression-test	2014-09-02 11:56:39 -0400	2014-09-02 12:10:30 -0400	2014-09-02 12:10:30 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:29 -0400	2014-09-02 12:10:29 -0400	2014-09-02 12:10:30 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:25 -0400	2014-09-02 12:10:26 -0400	2014-09-02 12:10:27 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:23 -0400	2014-09-02 12:10:23 -0400	2014-09-02 12:10:24 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:20 -0400	2014-09-02 12:10:20 -0400	2014-09-02 12:10:21 -0400
zos-workflow-simple-load-test-02	Workflow	Success	Workflow: zos-workflow-regression-test	2014-09-02 11:56:39 -0400	2014-09-02 12:10:19 -0400	2014-09-02 12:10:19 -0400
zos-task-load-simple-02	z/OS	Success	Workflow: zos-workflow-simple-load-test-02	2014-09-02 12:10:17 -0400	2014-09-02 12:10:17 -0400	2014-09-02 12:10:19 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:15 -0400	2014-09-02 12:10:15 -0400	2014-09-02 12:10:19 -0400
zos-task-load-simple-02	z/OS	Success	Workflow: zos-workflow-simple-load-test-02	2014-09-02 12:10:12 -0400	2014-09-02 12:10:12 -0400	2014-09-02 12:10:15 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:11 -0400	2014-09-02 12:10:11 -0400	2014-09-02 12:10:14 -0400
zos-workflow-simple-load-test-03	Workflow	Success	Workflow: zos-workflow-regression-test	2014-09-02 11:56:39 -0400	2014-09-02 12:10:13 -0400	2014-09-02 12:10:13 -0400
zos-task-load-simple-03	z/OS	Success	Workflow: zos-workflow-simple-load-test-03	2014-09-02 12:10:09 -0400	2014-09-02 12:10:09 -0400	2014-09-02 12:10:13 -0400
zos-task-load-simple-02	z/OS	Success	Workflow: zos-workflow-simple-load-test-02	2014-09-02 12:10:07 -0400	2014-09-02 12:10:08 -0400	2014-09-02 12:10:11 -0400
zos-task-load-simple-01	z/OS	Success	Workflow: zos-workflow-simple-load-test-01	2014-09-02 12:10:06 -0400	2014-09-02 12:10:06 -0400	2014-09-02 12:10:10 -0400

**Note**  
 Once you have displayed the Activity Monitor, it remains open throughout your Controller session unless you manually close it by clicking the x icon in the Activity Monitor tab at the top of the page. (The same is true for the Dashboards.)

If you click a page in the Navigator while viewing the Activity Monitor or Dashboards, a new tab for that page will open. The Activity Monitor and Dashboards tabs remain at the top of the screen if you navigate from them, providing for a quick return to those pages.

## Activity Monitor Column Descriptions

The following table describes the default columns of information displayed on the Activity Monitor.

Column Name	Description
Instance Name	Name of this task instance.
Type	Type of task instance.
Status	Current <a href="#">status</a> of this task instance.
Invoked By	How the task instance was launched. One of the following: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) - The instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) - The instance was launched by the named workflow.</li> <li>• Manually Launched - The instance was launched by a user. To determine the name of the user:                             <ol style="list-style-type: none"> <li>1. From the Activity or Task Instances screen, click the task instance name to open the record.</li> <li>2. The Execution User field identifies the user who launched the task instance.</li> </ol> </li> </ul>
Start Time	Date and time the task instance started.

End Time	Date and time the task instance ended.
Updated	Date and time that this task instance was last updated.

## Activity Monitor Task Bar

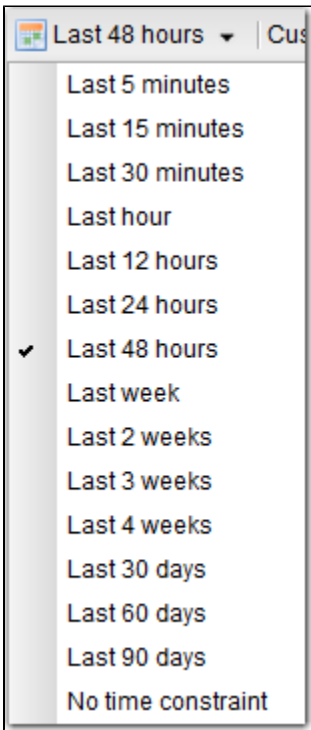
An Activity Monitor task bar displays across the top of the [Activity Monitor](#), which allows you to select which task instances display on the Activity Monitor.



## Time Constraint

The Time Constraint drop-down list in the Activity Monitor Selections task bar allows you to select a time frame for which you want task instances to display on the Activity Monitor.

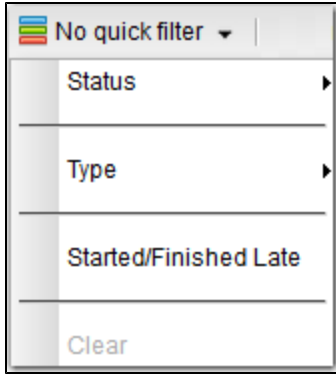
The default time constraint, as specified by the [Activity Time Constraint](#) user preference, is 48 hours.



## Quick Filter

The Quick Filter menu in the Activity Monitor Selections task bar allows you to filter the list with simple, pre-defined criteria so that only task instances matching that criteria within the selected [Time Constraint](#) and any selected [Custom Filter](#) display on the Activity Monitor.

To display the Quick Filter menu, click the Quick Filter button on the task bar which, by default, is identified as **No quick filter**.

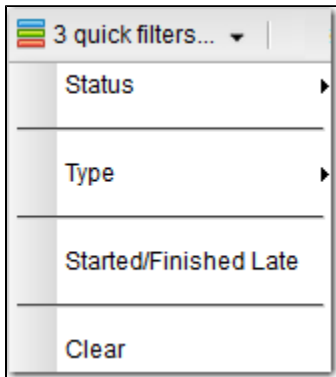


The Quick Filter menu allows you to select any combination of the following filters to the list:

- **Status:** Individual [task instance status](#) and the following composite statuses:
  - Active = All task instance statuses except Skipped (180), Finished (190), Success (200).
  - Blocked = Waiting (10), Held (20), Exclusive Wait (23), Resource Wait (30), Execution Wait (33), and Action Required (60) task instance statuses.
  - Completed = Skipped (180), Finished (190), and Success (200) task instance statuses.
  - Problem = Undeliverable (35), Running/Problems (81), Cancel Pending (99), In Doubt (110), Start Failure (120), Confirmation Required (125), Cancelled (130), and Failed (140) task instance statuses.
- **Type:** Individual [task type](#).
- **Started/Finished Late:** Task instance started and/or finish late according to the Start / Finish Late times specified in the task Details.
- **Clear** = Clears all Quick Filters from the list. (You can clear individual Quick Filters by deselecting them on the menu.)

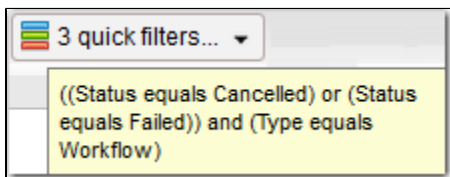
**Note**  
 You can change the names of the composite statuses Quick Filters (Active, Blocked, Completed, and Problem), and the task instance statuses included in each one, by editing the [System Default Activity Quick Filters](#) Universal Controller system property.

You must select each Quick Filter individually; you cannot use Ctrl-click to select multiple Quick Filters. The Quick Filter button provides a count of how many Quick Filters have been applied to the list. For example, the following Quick Filter button shows that three separate quick filters have been applied.



The **Clear** button now is enabled, allowing you to remove all Quick Filters from the list in one click.

To see which Quick Filters have been applied to the list, hover your cursor over the Quick Filter button.



## Custom Filter

The **Custom Filter** field and **Filter...** button in the Activity Monitor Selections task bar allows you to filter the list with complex, user-defined criteria so that only task instances matching that specified criteria within the selected **Time Constraint** and any selected **Quick Filter** display on the Activity Monitor.



See [Filters](#) for detailed information on applying and saving filters.

## Refresh

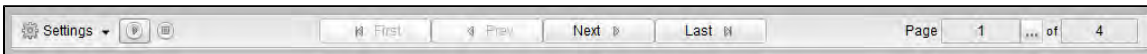
The **Refresh** button enables you to perform a manual **refresh** of the information displayed on the Activity Monitor.



When you click the Refresh button, the button is disabled (the icon turns grey) until the refresh is complete. The Refresh button also is disabled if the Activity Monitor has not been started and is not monitoring activity.

## Activity Monitor Display Task Bar

An Activity Monitor Display task bar displays across the bottom of the **Activity Monitor**, which allows you to select which task instances on the Activity Monitor to view and how often the data for those task instances is refreshed.



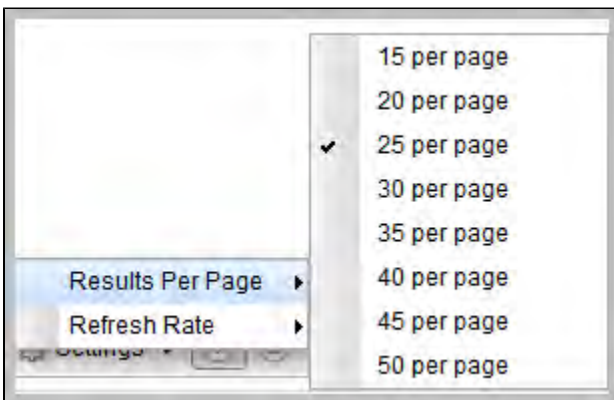
## Settings

The Settings drop-down list provides the following selections:

- Results Per Page
- Refresh Rate

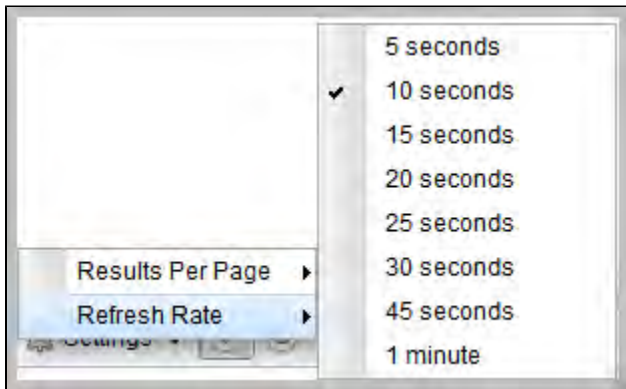
### Results Per Page

Hover your cursor **Results Per Page** on the Settings drop-down list to select the number of task instances to be displayed on a page (default is 25).



### Refresh Rate

Hover your cursor over **Refresh Rate** on the Settings drop-down list to select a refresh rate for the data displayed on the Activity Monitor (default is 10 seconds).



### Start and Stop Activity Monitor

Start and Stop buttons on the Activity Monitor allow you to start and stop the monitoring of activity on the Controller.

The [Activity Monitor Automatically](#) value specifies whether or not the Activity Monitor automatically is monitoring Controller activity.

You can override that value by electing either of the following, as appropriate:

	Starts monitoring Controller activity. The Activity Monitor displays task instances according to the current <a href="#">Time Constraint</a> setting and any applied <a href="#">Filters</a> .
	Stops monitoring Controller activity. All task instances are removed from the Activity Monitor display.

### Page Navigation Buttons

Page navigation buttons allow you to scroll through the pages of task instances that are displayed according to the current Activity Monitor settings.

	Displays the first page of the list.
	Displays the previous page of the list.
	Displays the next page of the list.
	Displays the last page of the list.



**Note**

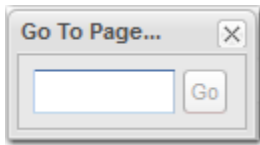
You also can specify a specific page number to go to (see [Page Numbering](#), below).

### Page Numbers

Page Numbers buttons in the task bar identify the number of the currently displayed page and the total number of pages.



You can go to a specific page number by clicking the ellipse ( ... ) icon that displays after the current page number. A Go To Page pop-up displays.



Enter a page number and click the **Go** button to navigate to that page.

## Displaying Task Instance Details

To view details about any task instance displayed on the [Activity Monitor](#), click the **Details** icon next to the **Instance Name** of that task instance.

## Issuing Commands Against Task Instances

Where applicable, you can manually intervene in processing by [issuing a command](#) against one or more task instances.

For information about the commands available for each type of task, see [Supported Commands](#).



## Monitoring Activity from the Task Instances List

- Overview
- Displaying the Task Instances List
  - Task Instances List Column Descriptions
- Task Instances List Task Bar
  - Time Constraint
  - Filtering
- Accessing Task Instance Details
- Issuing Commands Against Task Instances

### Overview

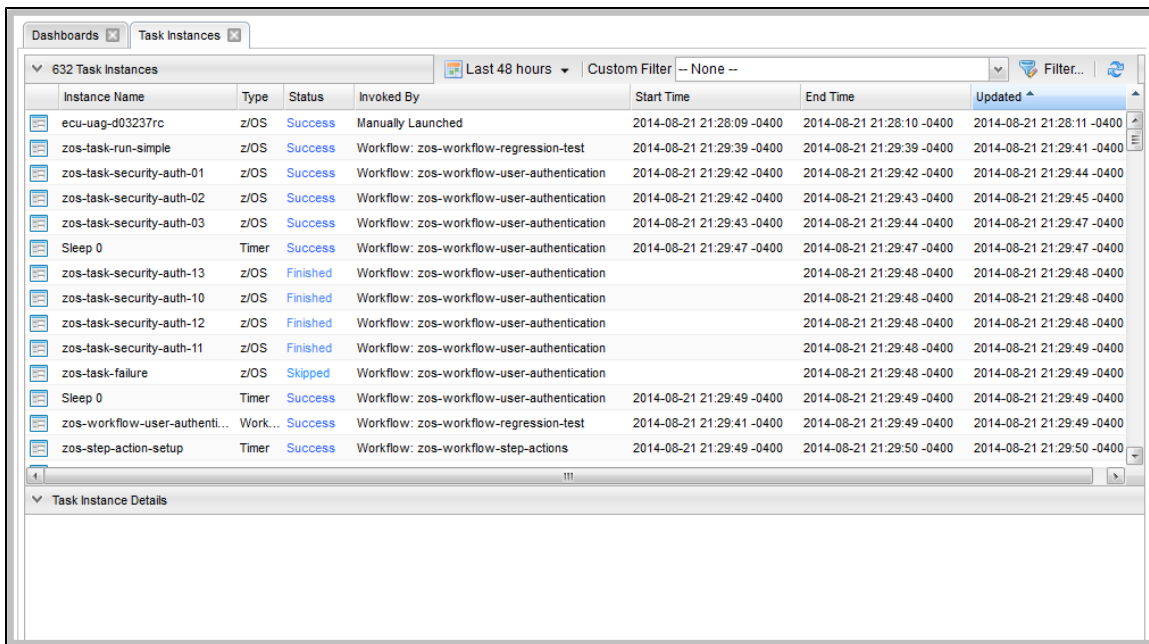
The Task Instances list displays the same task instance information as the [Activity Monitor](#), but only for task instances for which there has been a status change or a modification to the task instance record.

Also, unlike the Activity Monitor, the Task Instances list is not automatically refreshed.

You also can monitor activity for a specific task by displaying [task-specific Task Instances Details](#).

### Displaying the Task Instances List

From the [Automation Center](#) navigation pane, select **Task Instances > All Task Instances**. The Task Instances list displays.



### Task Instances List Column Descriptions

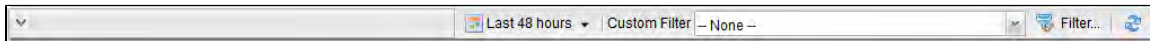
The following table describes the default columns of information displayed on the Task Instances list.

Column	Description
Instance Name	Name of this task instance.

Invoked By	System-supplied; how the task instance was launched. One of the following: <ul style="list-style-type: none"> <li>• Trigger: (Trigger Name) - The instance was launched by the named trigger.</li> <li>• Workflow: (Workflow Name) - The instance was launched by the named workflow.</li> <li>• Manually Launched - The instance was launched by a user. To determine the name of the user:                 <ol style="list-style-type: none"> <li>1. From the Activity or Task Instances screen, click the task instance name to open the record.</li> <li>2. The Execution User field identifies the user who launched the task instance.</li> </ol> </li> </ul>
Start Time	Date and time the task instance started.
End Time	Date and time the task instance ended.
Status	Current <a href="#">status</a> of the task instance.
Type	Type of task instance.
Updated	Date and time this task instance ended or was last updated.

## Task Instances List Task Bar

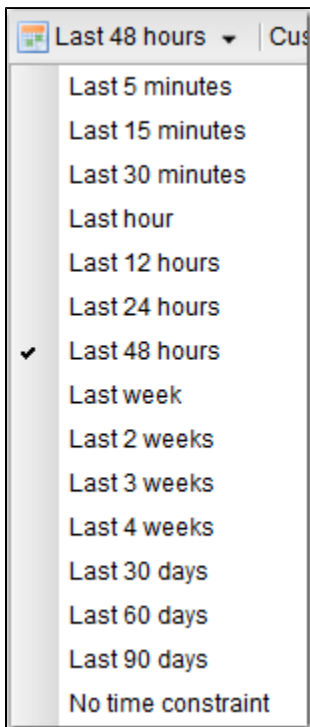
A Task Instances List task bar displays across the top of the [Task Instances list](#), which allows you to select which task instances display on the list.



### Time Constraint

The Time Constraint drop-down list in the Task Instance Selections task bar allows you to select a time frame for which you want task instances to display on the list.

The default time constraint, as specified by the [Task Instances Time Constraint](#) user preference, is 48 hours.



### Filtering

The **Custom Filter** field and **Filter...** button in the Task Instance Selections task bar allows you to filter the list so that only task instances

matching the specified criteria within the selected time constraint display on the list.



See [Filters](#) for detailed information on applying and saving filters.

## Accessing Task Instance Details

To display Details for a task instance, either:

- Click the **Instance Name** of the task instance to display the Details below the list.
- Click the **Details** icon next to the **Instance Name** of the task instance to display a Details pop-up.

## Issuing Commands Against Task Instances

Where applicable, you can manually intervene in processing by [issuing a command](#) against one or more task instances.

For information about the commands available for each type of task, see [Supported Commands](#).

## Monitoring Activity History

- Overview
- Displaying the History List
- History List Task Bar
  - Time Constraint
  - Filtering
- Displaying History Details

### Overview

The History list provides an historical display of all completed task activity. Only task instances with a status in an "end state" (SUCCESS, FINISHED, FAILED, CANCELLED, START FAILURE, SKIPPED) display on the History screen.

The list allows you to track information about specific task instances, including multiple runs. For example, Task A may have failed and then was re-run by a user. This task instance will display twice on the History list, first for the time that it ran and failed and again for the time it was re-run to success.



**Note**

If you want to display task activity for all tasks, for task instances in any status, and issue commands against those task instances, see the [Activity Monitor](#) and/or [Task Instances list](#)

If you want to display task activity for a specific task, for task instances in any status, and issue commands against those task instances, see the [Viewing Task Instances for a Specific Task](#).

### Displaying the History List

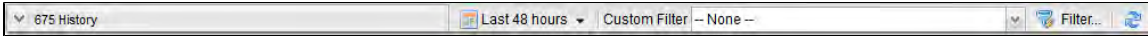
**Step 1** From the Automation Center navigation pane, select **Task Instances > History**. The History list displays.

Instance Name	Instance Id	Type	Status	Start Time	End Time	Duration	Waited for Resources	Waited for Exclusive	Updated By	Updated
zos-task-load-simple-02	93	z/OS	Success	2014-08-21 21:35:04 -0400	2014-08-21 21:35:04 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:35:08 -0400
zos-task-load-simple-05	31	z/OS	Success	2014-08-21 21:42:50 -0400	2014-08-21 21:42:51 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:42:54 -0400
zos-task-load-simple-04	25	z/OS	Success	2014-08-21 21:37:06 -0400	2014-08-21 21:37:07 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:37:10 -0400
zos-task-security-auth-11	1	z/OS	Start Failure				No	No	ops.system	2014-08-21 21:29:48 -0400
zos-task-load-simple-01	66	z/OS	Success	2014-08-21 21:35:42 -0400	2014-08-21 21:35:42 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:35:45 -0400
zos-task-load-simple-04	14	z/OS	Success	2014-08-21 21:45:20 -0400	2014-08-21 21:45:20 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:45:23 -0400
zos-task-rerun-auto-02	1	z/OS	Step Restarted				No	No	ops.system	2014-08-21 21:30:24 -0400
zos-task-load-simple-02	33	z/OS	Success	2014-08-21 21:34:43 -0400	2014-08-21 21:34:45 -0400	1 Seconds	No	No	ops.system	2014-08-21 21:34:48 -0400
zos-task-load-simple-03	19	z/OS	Success	2014-08-21 21:34:47 -0400	2014-08-21 21:34:48 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:34:50 -0400
zos-task-load-simple-04	69	z/OS	Success	2014-08-21 21:40:19 -0400	2014-08-21 21:40:20 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:40:23 -0400
zos-task-load-simple-05	95	z/OS	Success	2014-08-21 21:41:15 -0400	2014-08-21 21:41:16 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:41:19 -0400
zos-task-load-simple-02	10	z/OS	Success	2014-08-21 21:35:43 -0400	2014-08-21 21:35:44 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:35:47 -0400
zos-task-stepond-abend...	1	z/OS	Failed	2014-08-21 21:30:30 -0400	2014-08-21 21:30:43 -0400		No	No	ops.system	2014-08-21 21:30:43 -0400
zos-task-load-simple-01	82	z/OS	Success	2014-08-21 21:34:13 -0400	2014-08-21 21:34:13 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:34:17 -0400
zos-task-load-simple-05	2	z/OS	Success	2014-08-21 21:36:09 -0400	2014-08-21 21:36:09 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:36:13 -0400
zos-task-load-simple-02	54	z/OS	Success	2014-08-21 21:42:29 -0400	2014-08-21 21:42:34 -0400	5 Seconds	No	No	ops.system	2014-08-21 21:42:37 -0400
zos-task-stepond-abend...	1	z/OS	Finished	2014-08-21 21:31:26 -0400	2014-08-21 21:31:36 -0400	9 Seconds	No	No	ops.system	2014-08-21 21:31:36 -0400
zos-task-load-simple-02	28	z/OS	Success	2014-08-21 21:36:23 -0400	2014-08-21 21:36:24 -0400	1 Seconds	No	No	ops.system	2014-08-21 21:36:28 -0400
zos-task-load-simple-03	51	z/OS	Success	2014-08-21 21:47:02 -0400	2014-08-21 21:47:03 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:47:06 -0400
zos-task-rerun-auto-02	1	z/OS	Step Restarted				No	No	ops.system	2014-08-21 21:30:47 -0400
zos-task-load-simple-02	46	z/OS	Success	2014-08-21 21:41:35 -0400	2014-08-21 21:41:35 -0400	0 Seconds	No	No	ops.system	2014-08-21 21:41:38 -0400
zos-task-load-simple-04	17	z/OS	Success	2014-08-21 21:41:38 -0400	2014-08-21 21:41:45 -0400	5 Seconds	No	No	ops.system	2014-08-21 21:41:47 -0400

**Step 2** You can modify the display by filtering, sorting, adding, and removing columns (see [Record Lists](#)).

### History List Task Bar

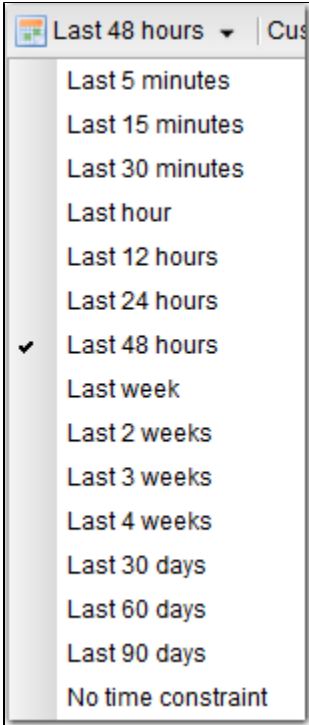
A History List task bar displays across the top of the [History list](#), which allows you to select which task instances display on the list.



## Time Constraint

The Time Constraint drop-down list in the History List Selections task bar allows you to select a time frame for which you want task instances to display on the list.

The default time constraint, as specified by the [History Time Constraint](#) user preference, is 48 hours.



## Filtering

The **Custom Filter** field and **Filter...** button in the History List Selections task bar allows you to filter the list so that only task instances matching the specified criteria within the selected time constraint display on the list.



See [Filters](#) for detailed information on applying and saving filters.

## Displaying History Details

To display execution details about any task instance on the History list, either:

- Click anywhere in the task instance row to display the Details for that task instance below the list.
- Click the icon next to any **Instance Name** to display a pop-up version of the Details.

History Details: stonebranch-saptask-01

History

Details

Instance Name: stonebranch-saptask-01

Task Description:

Task Instance Name: stonebranch-saptask-01 Instance Id: 6

Task Name: stonebranch-saptask-01 Invoked By: Workflow: stonebranch-workflow-01

Type: SAP agentsim1 Trigger Name:

Status: Finished Agent Name: stonebranch-agent-00

Exit Code: 0

Waited for Resources:

Waited for Exclusive:

Duration:

Start Time:

End Time: 2014-07-09 13:03:05 -0400

Status Description: Agent is not Active -> State was forced from UNDELIVERABLE to FINISHED

Member of:

Business Services:

Delete Close

Delete Close

For a description of the fields displayed on the History Details, see the Task Instance Details field descriptions for that task type.

## Monitoring Workflows

- Overview
- Monitoring a Running Workflow
  - Workflow Monitor Modes
- Workflow Monitor Toolbar
  - Workflow Monitor Tools
- Workflow Monitor Display Mode
  - Task Name
  - Task Type
  - Task Status
  - Task Details
  - Displaying Task Status Icons
- Manually Intervening in a Workflow
- Monitoring the Critical Path in a Workflow
  - Critical Path Settings
  - Running a Workflow Enabled for Critical Path
  - Critical Path Status

### Overview

Universal Controller allows you to monitor running Workflows in graphical format. As the Workflow progresses, the display provides up-to-date textual and color-coded status information for each task instance in the Workflow. You can also intervene in processing where necessary.

### Monitoring a Running Workflow






**Note**

A Workflow already must be running in order for you to monitor its status.

<b>Step 1</b>	From the Automation Center navigation pane, select <b>Task Instances &gt; Activity</b> .
<b>Step 2</b>	Click the Details icon for the Workflow you want to monitor. The <b>Workflow Task Instance Details</b> for that Workflow displays.
<b>Step 3</b>	Click the <b>View Workflow</b> button to display the Workflow Monitor for that Workflow, as shown in the following example.

### Workflow Monitor Modes

The Workflow Monitor has two modes. Each mode, which you select by clicking the appropriate icon in the **Workflow Monitor toolbar**, allows you to use one or more specific **Workflow Monitor tools**.

Icon	Mode	Description
	<b>Select</b>	Clicking the <b>Select</b> icon on the Workflow Monitor toolbar places the Workflow Editor in <b>Select</b> mode, which allows you to use all <a href="#">Workflow Monitor tools</a> except <b>Connect</b> and <b>Pan</b> . The <b>Select</b> mode is the default mode for the Workflow Monitor.
	<b>Pan</b>	Clicking the <b>Pan</b> icon on the Workflow Monitor toolbar places the Workflow Monitor in <b>Pan</b> mode, which allows you to scroll around in the Workflow. (You also can use the <b>Outline</b> tool in any mode) to scroll around in the Workflow.  In <b>Pan</b> mode, you also can use all other <a href="#">Workflow Monitor tools</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>  <b>Pan</b> mode does not allow you to use the drag and drop method for <b>moving</b>, <b>deleting</b>, and <b>copying</b> groups of Workflow elements.</p> </div>

## Workflow Monitor Toolbar

The Workflow Monitor toolbar, which displays above the Workflow Monitor, contains icons for every tool that you need to monitor a Workflow.









A shadowed outline around the icon in the toolbar indicates the currently selected [Workflow Monitor mode](#).

The following example shows that the Workflow Monitor is in **Select** mode.















## Workflow Monitor Tools

The following table describes the tools used to monitor Workflows, including the tools associated with the two [Workflow Monitor modes](#). The tools are listed by icon, as they appear - left to right - in the [Workflow Monitor toolbar](#).

Icon	Tool	Description
	View Parent	If this Workflow is embedded in another Workflow, navigates to the parent. If this Workflow has more than one parent, clicking this icon displays a list of all parent Workflows; in this case, to navigate to a parent Workflow, double-click the Workflow's icon. To return to your original Workflow, click its name. (The current Workflow name displays in the lower right corner of the editor.)  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b>                      To open an embedded Workflow (sub-Workflow) from its Parent Workflow, double-click the embedded Workflow.</p> </div>
	Print	Prints the current Workflow.
	Select	Places the Workflow Editor in <a href="#">Select mode</a> .
	Pan	Places the Workflow Editor in <a href="#">Pan mode</a> .  To pan around the Workflow, click anywhere in the Workflow Editor canvas and drag your cursor to display any section of the Workflow.  To return to your original location, click the <a href="#">Actual Size</a> icon.
	Undo	Click to undo the most recent change.
	Redo	Click to redo the most recent change that you undid by clicking <a href="#">Undo</a> .
	Fit	Fits the Workflow into the display. If necessary, this shrinks the icons and size of the Workflow in order to make it fit. You can undo a <a href="#">Fit</a> by clicking the <a href="#">Actual Size</a> icon.



	Zoom In	Zooms in (enlarges) the Workflow. To return the Workflow to its default size, click the <a href="#">Actual Size</a> icon.
	Zoom Out	Zooms out (diminishes) the Workflow. To return the Workflow to its default size, click the <a href="#">Actual Size</a> icon.
	Actual Size	Returns the Workflow to its default size after a <a href="#">Fit</a> or <a href="#">Zoom</a> .
	Zoom	Opens a window that allows you to specify a zoom ratio. For example, to double the size of the Workflow, enter 200 and click <b>OK</b> . To return the Workflow to its default size, click the <a href="#">Actual Size</a> icon.
	Horizontal Layout	Reformats the Workflow into a horizontal layout.
	Vertical Layout	Reformats the Workflow into a vertical layout.
	Toggle Vertex Style	For running Workflows, switches the icon display between status-related icons and task-related icons (see <a href="#">Workflow Monitor Display Mode</a> ). This icon only appears on the icon bar when you are monitoring a running Workflow.
	Toggle Critical Path View	Toggles between the normal view of the Workflow and the <a href="#">Critical Path View</a> .  <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b> This icon displays in the toolbar only if the <a href="#">Critical Path Calculations Permitted</a> Universal Controller system property is set to <b>true</b>.</p> </div>
	Outline	For large Workflows, the outline provides a way of positioning a specific area of the Workflow in the display, without using the <a href="#">Pan mode</a> .  <ol style="list-style-type: none"> <li>1. Click the <b>Outline</b> icon. The <b>Outline</b> window opens.</li> <li>2. In the <b>Outline</b> window, move and/or resize the blue box to identify the area of the Workflow you want to work on. The display repositions to show only the area within the blue box.</li> </ol>
	Help	Displays help documentation for Workflows.
	Console	While a Workflow is running, you can click the <a href="#">Console</a> icon to display processing messages.

## Workflow Monitor Display Mode

The default display mode for the Workflow Monitor identifies each task instance in the workflow by:




- [Task name](#)
- [Task type](#)
- [Task status](#)







### Task Name

The task name is the name given to the task when it was created (see [Creating Tasks](#)).

### Task Type

The task type of each task is represented by an icon that displays above the task name.

 Application Control	 Email	 File Monitor	 File Transfer
 FTP File Monitor	 Universal Command	 Linux/Unix	 Manual
 SAP	 Timer	 SQL	 Stored Procedure

 System Monitor	 Task Monitor	 Variable Monitor	 Windows
 Workflow	 z/OS		



**Note**

You can change the Workflow Monitor so that the icon above each task name represents the current status of that task instance (see [Displaying Task Status Icons](#)).

### Task Status

The current status of each task displays below the task name.

The Controller assigns a default color for each status, which you can change. See [Colors](#) for a list all statuses and the default colors assigned to them, and for information on how to change any of the colors.

### Task Details

You can display detailed information (including status) for any task by hovering your mouse over the task. The following menu displays:

**Task Instance Name:** indesca-win-redirect-stdout - [qa-win7-x64 - WIN7X64]

**Task Instance Id:** 1461615415834464472RLS03T8SO55FD

**Task Id:** 1398307004543.d1e0fdc76d044676b011e4dd0ddb6795

**Vertex Id:** 6

**Status:** Failed

**Next Retry Time:** 2016-04-25 17:06:21 -0400






**Note**

The Next Retry Time field displays in the menu only if the task is in Failed status and scheduled for retry.

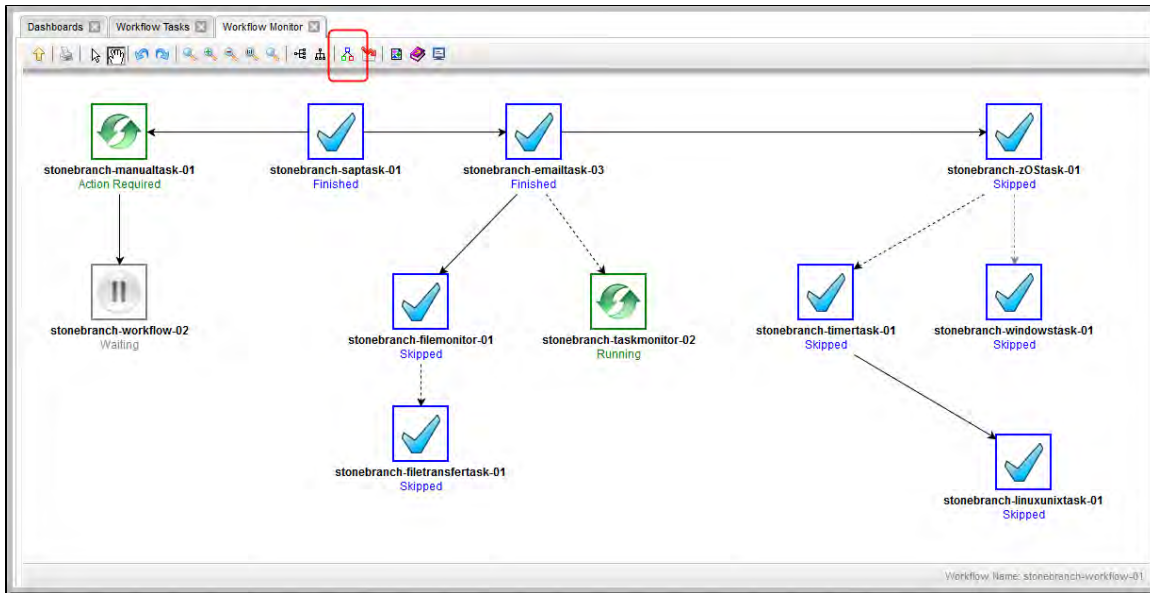
### Displaying Task Status Icons


Each task status is categorized into one of five task status types: Running, Complete, Not Running, Problem, and Status Unknown.

Each task status type has a corresponding icon.

 Running	 Complete	 Not Running	 Problem	 Status Unknown
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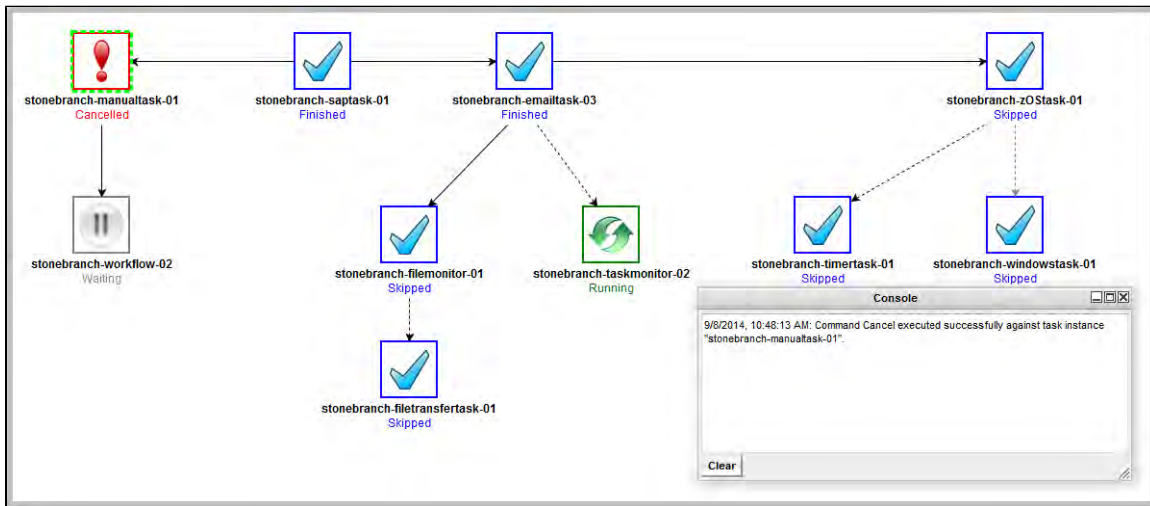
You can switch the Workflow Monitor display mode, which by default shows icons that represent [task types](#), so that the icons represent task status types, as shown in the following example.



To switch display modes, click the **Toggle Vertex Style** icon .

## Manually Intervening in a Workflow

You can take action on a task in a running workflow by right-clicking the task and [selecting a command](#) from the pop-up command list. When you select a command, the Console window automatically opens and displays processing information.



## Monitoring the Critical Path in a Workflow

You can instruct the Controller to calculate the Critical Path of a Workflow, which is the path of task instances in the Workflow that will take the longest time to complete.

The Controller bases the Critical Path on:

- Current historical average duration statistics for each task in the Workflow. (If no statistics exist for a task - that is, it has never been run - the Controller assigns it a run time of 1 second).
- Critical Path Duration time that you can specify in the task Details for any task in the Workflow, which will override the run-time statistics.

## Critical Path Settings

To monitor the Critical Path of a Workflow, you must set the following:

- In **Configuration > Properties**, set the **Critical Path Calculations Permitted** system property to **true**.
- In the Workflow Details, enable the **Calculate Critical Path** field.
- In the Workflow Monitor toolbar, click the **Toggle Critical Path View** icon.

By default, any Workflow with the **Calculate Critical Path** field enabled will be displayed in the Workflow Monitor in Critical Path View. To toggle in and out of Critical Path View, click the **Toggle Critical Path View** icon.



**Note**

If you are using **View In Workflow** to open the Workflow Monitor, or the Workflow being opened has a status of Skipped, Critical Path View will be toggled off by default.

### Running a Workflow Enabled for Critical Path

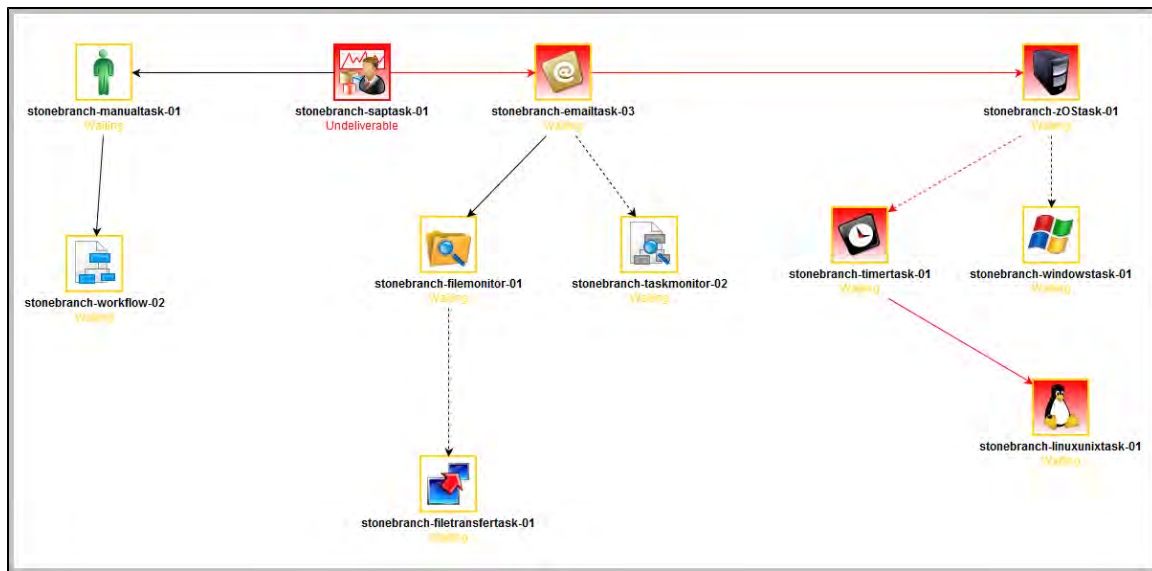
When you run a Workflow enabled for Critical Path, the Workflow Monitor initially displays the Critical Path based on historical average duration statistics and any **CP Duration** override values for any tasks in the Workflow. When a task instance completes, the Critical Path could change, based on the actual time it took the task to complete. For example, if you specified a Critical Path Duration of 5 minutes for a task, but the task completed in 30 seconds, the Controller might adjust the Critical Path to show a path that it now estimates will take the longest to complete.



**Note**

For a top-level Workflow that has been enabled for Critical Path, its sub-Workflows display Critical Paths only if they themselves have been enabled for Critical Path.

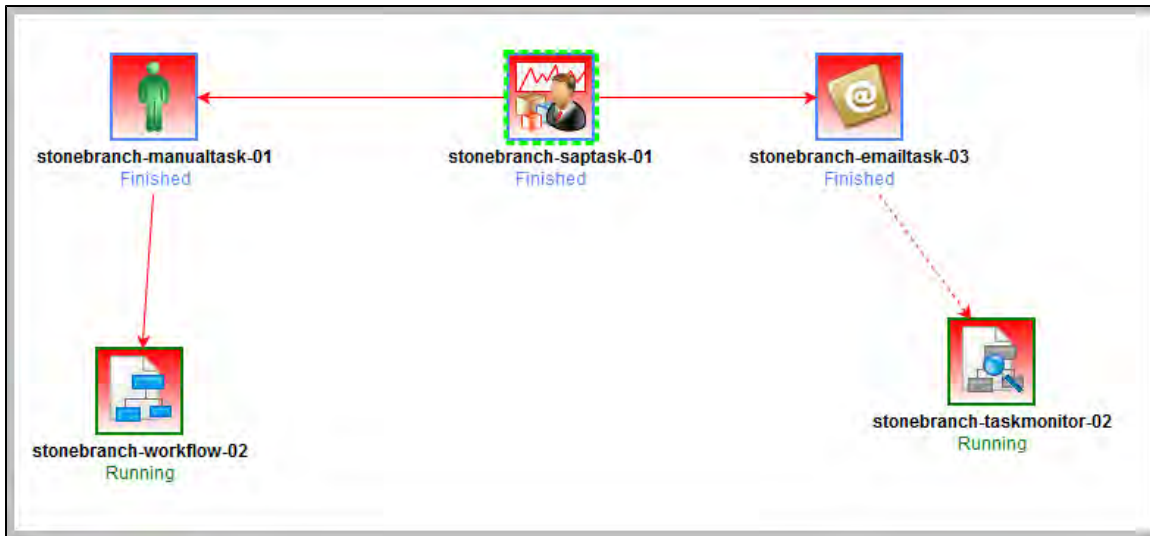
In Critical Path View, Task instances and connectors in the Critical Path display in the color specified by the **Critical Path Color** system property.



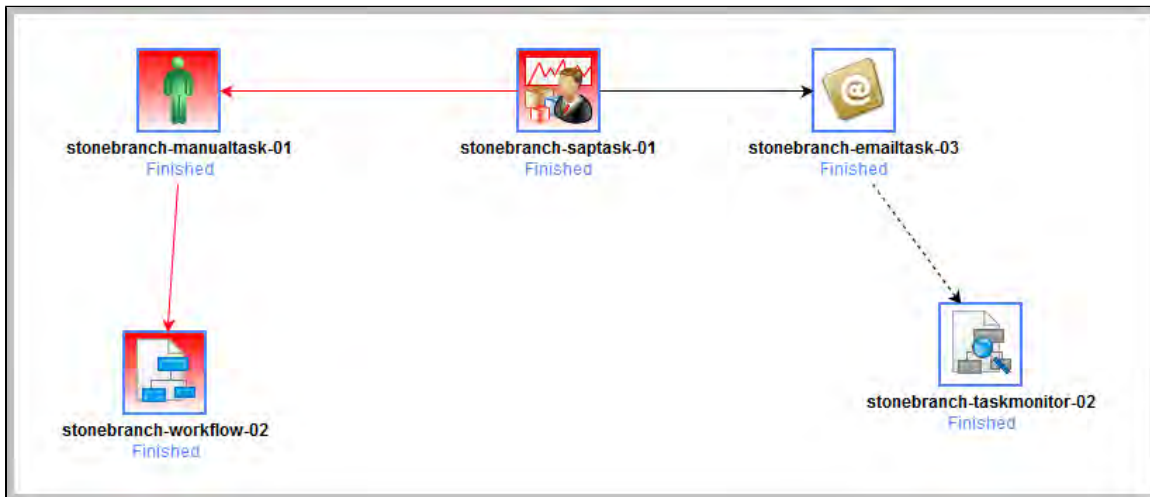
The Critical Path View is dynamic; if task instances are Skipped in a Workflow, and they longer are part of the Critical Path, they no longer display on the Workflow Monitor while it is in Critical Path View.

If you are in Critical Path View, but you want to see Skipped task instances, you can restore the standard view by clicking the **Toggle Critical Path View** icon in the Workflow Monitor toolbar.

Also, in Critical Path View, **Show Skipped / Restore** and **Hide Skipped** are disabled in the Workflow Monitor pop-up menu of commands and options.



When the Workflow completes, the final Critical Path displays.



### Critical Path Status

#### Activity Monitor and Task Instances List

You can monitor whether a task instance is critical (or along a critical path) in a Workflow from the [Activity Monitor](#) and [Task Instances List](#).

The task instance Details icon for task instances that are critical (or along in a Critical Path) is tinted red.

Instance Name	Type	Status	Invoked By	Start Time	End
stonebranch-workflow-01	Workflow	Running/Problems	Manually Launched	2015-12-08 09:20:51 -0500	
stonebranch-saptask-01	SAP	Undeliverable	Workflow: stonebranch-workflow-01		
stonebranch-manualtask-01	Manual	Waiting	Workflow: stonebranch-workflow-01		
stonebranch-zOStask-01	z/OS	Waiting	Workflow: stonebranch-workflow-01		
stonebranch-filemonitor-01	File Monitor	Waiting	Workflow: stonebranch-workflow-01		
stonebranch-timertask-01	Timer	Waiting	Workflow: stonebranch-workflow-01		
stonebranch-filetransfertask-01	File Transfer	Waiting	Workflow: stonebranch-workflow-01		
stonebranch-emailtask-03	Email	Waiting	Workflow: stonebranch-workflow-01		
stonebranch-taskmonitor-02	Task Monitor	Waiting	Workflow: stonebranch-workflow-01		
stonebranch-linuxunixtask-01	Linux/Unix	Waiting	Workflow: stonebranch-workflow-01		
stonebranch-windowstask-01	Windows	Waiting	Workflow: stonebranch-workflow-01		
stonebranch-workflow-02	Workflow	Waiting	Workflow: stonebranch-workflow-01		

## Reports

You can enhance existing Task Instance reports or create new Task Instance reports by utilizing the [Critical](#) and [Projected End Time](#) fields. For example, you might want to report on task instances that have not completed and are on the critical path, or you might want to report on task instances that have a failure status and are on the critical path.

## Viewing Task Instances for a Specific Task

From the Task Details of any task, you can display a list of task instances for that task and the Details of any specific task instance.

The list will display all task instances for which there has been a status change or a modification to the task instance record within the last 30 days.

(You also can display Details of any specific task instance from the [Task Instances list](#).)

**Step 1** From the Automation Center navigation pane, select the task from the **Tasks > All Tasks** or **Tasks > <task type> Tasks** list. The Task Details for that task displays.

For example:

The screenshot shows a web-based interface for configuring a Linux/Unix task. The window title is "Linux/Unix Task Details: stonebranch-linuxunixtask-01". At the top, there is a toolbar with buttons for Update, Launch Task, View Parents, Copy, Delete, Refresh, and Close. Below the toolbar is a tabbed interface with the following tabs: Linux/Unix Task (selected), Variables, Actions, Virtual Resources, Mutually Exclusive, Instances, Triggers, Notes, and Versions.

The main content area is divided into several sections:

- General:**
  - Task Name: stonebranch-linuxunixtask-01
  - Version: 17
  - Task Description: (empty text area)
  - Member of Business Services: stonebranchbusinessservice 01
  - Hold on Start:
  - Virtual Resource Priority: 10
  - Hold Resources on Failure:
- Linux/Unix Details:**
  - Agent: qa-agentsim1 - simagent1
  - Agent Cluster: (empty dropdown)
  - Agent Variable:
  - Agent Cluster Variable:
  - Credentials: stonebranch-credential-01
  - Cluster Broadcast: (empty dropdown)
  - Credentials Variable:
  - Run as sudo:
  - Command or Script: Command
  - Command: dir
  - Parameters: (empty text area)
  - Runtime Directory: (empty text area)
  - Environment Variables: (empty table with columns Name and Value, showing "No items to show.")
  - Exit Code Processing: Success Exitcode Range
  - Exit Codes: 0
  - Automatic Output Retrieval: -- None --
- Retry Options:**
  - Retry Exit Codes: (empty text area)
  - Maximum Retries: 0
  - Retry Indefinitely:
  - Retry Interval (Seconds): 60
- Wait/Delay Options:**
  - Wait To Start: -- None --
  - Delay On Start: -- None --
  - Workflow Only: -- System Default --
- Time Options:**
  - Late Start:
  - Late Finish:
  - Early Finish:
  - User Estimated Duration: (Day, Hour, Min, Sec dropdowns)

At the bottom of the window, there is another toolbar with buttons for Update, Launch Task, View Parents, Copy, Delete, Refresh, and Close.



**Step 2** Click the **Instances** tab. A list of instances for that task displays.

The screenshot shows a window titled "Linux/Unix Task Details: stonebranch-linuxunixtask-01". It has several tabs: "Linux/Unix Task", "Variables", "Actions", "Virtual Resources", "Mutually Exclusive", "Instances" (which is selected), "Triggers", "Notes", and "Versions". Below the tabs is a table with the following data:

Instance Name	Type	Status	Invoked By	Start Time	End Time	Updated
stonebranch-linuxunixtask-01	Linux/Unix	Finished	Workflow: stonebranch-workflow-01	2014-07-09 13:03:05 -0400	2014-07-09 13:03:05 -0400	2014-07-09 13:03:05 -0400
stonebranch-linuxunixtask-01	Linux/Unix	Finished	Workflow: stonebranch-workflow-01	2014-07-09 10:52:20 -0400	2014-07-09 10:52:20 -0400	2014-07-09 10:52:20 -0400
stonebranch-linuxunixtask-01	Linux/Unix	Finished	Workflow: stonebranch-workflow-01	2014-07-09 10:47:34 -0400	2014-07-09 10:47:34 -0400	2014-07-09 10:47:34 -0400
stonebranch-linuxunixtask-01	Linux/Unix	Finished	Workflow: stonebranch-workflow-01	2014-07-09 09:44:59 -0400	2014-07-09 09:44:59 -0400	2014-07-09 09:44:59 -0400

**Step 3** Click the Details icon next to any **Instance Name** on the list to display the Details for that task instance.

Update Re-run Retrieve Output... Delete Refresh Close

Linux/Unix Task Instance
Virtual Resources
Exclusive Requests
Output
Notes

**General**

Instance Name:  Reference Id:

Task:  Invoked By:

Task Description:

Member of Business Services:  Execution User:

Virtual Resource Priority:  Hold Resources on Failure:

**Status**

Status:  Exit Code:

Status Description:

Operational Memo:

Wait Until Time:

Queued Time:

Trigger Time:  Start Time:

Launch Time:  End Time:

Duration:  CPU Time:

Process ID:

**Linux/Unix Details**

Agent:  Agent Cluster:

Agent Variable:  Agent Cluster Variable:

Credentials:  Credentials Variable:

Command or Script:  Run as sudo:

Command:

Parameters:

Runtime Directory:

Name	Value
No items to show.	

Exit Code Processing:

Exit Codes:

Automatic Output Retrieval:

Start Line:  Number of Lines:

Scan Text:

**Retry Options**

Retry Exit Codes:

Maximum Retries:  Retry Indefinitely:

Retry Interval (Seconds):  Current Retry Count:

**Wait/Delay Options**

Wait To Start:  Wait Duration In Seconds:

Delay On Start:  Delay Duration In Seconds:

**Statistics**

User Estimated End Time:  Average Estimated End Time:

Shortest Estimated End Time:  Longest Estimated End Time:

Update Re-run Retrieve Output... Delete Refresh Close



## Displaying Task Instance Status

- [Displaying Task Instance Status](#)
- [Task Instance Status Types](#)
  - [Agent-Based Task Types](#)
- [Task Instance Status Colors](#)

## Displaying Task Instance Status

You can display the status of one or more task instances from the Activity Monitor, Task Instances list, History list, or Command Line Interface (CLI).


<b>Activity Monitor</b>	<p>To display the status of one or more task instances on the Activity Monitor:</p> <ol style="list-style-type: none"> <li>From the <a href="#">Automation Center</a> navigation pane, select <b>Task Instances &gt; Activity</b>. The Activity Monitor contains a <b>Status</b> column that identifies the current status of every task instance on the list.</li> </ol>
<b>Task Instances list</b>	<p>To display the status of one or more task instances on the Task Instances list:</p> <ul style="list-style-type: none"> <li>From the <a href="#">Automation Center</a> navigation pane, select <b>Task Instances &gt; All Task Instances</b>. The Task Instances list contains a <b>Status</b> column that identifies the current status of every task instance on the list.</li> </ul>
<b>History list</b>	<p>To display the status of one or more task instances on the History list:</p> <ul style="list-style-type: none"> <li>From the <a href="#">Automation Center</a> navigation pane, select <b>Task Instances &gt; History</b>. The History list contains a <b>Status</b> column that identifies the current status of every task instance on the list.</li> </ul>
<b>Command Line Interface (CLI)</b>	<p>To display the status of one or more task instances from the Command Line Interface:</p> <ul style="list-style-type: none"> <li>Use the <a href="#">ops-task-status</a> function.</li> </ul>

## Task Instance Status Types

The following table describes all possible task instance statuses for all task types.

For a list of commands that you can issue against a task instance in each status, see [Commands Supported for Task Instance Statuses](#).

For a description of each command, see [Issuing Commands Against Task Instances](#).

 **Note**  
 The format of multi-word task status names used in the Controller user interface differs from the format of task status names specified in the [Display Task Instance Status](#) CLI function. In the user interface, they are separated by a space; in the [Display Task Instance Status](#) CLI function, the words are separated by an underscore character.

Status Name	Status Code	Task Type	Description
Action Required	60	Manual	When a manual task launches, it goes into Action Required status, meaning a user must perform some manual activity. For details, see <a href="#">Manual task</a> .
Cancel Pending	99	Agent-based	A process running on the Agent needs to be terminated. When the Cancel command is issued, the task instance will go into a Cancel Pending status until the Agent reports back that the process has been cancelled. At that point, the task instance will transition into the Cancelled status.

<b>Cancelled</b>	130	All	The task was cancelled by a user.
<b>Confirmation Required</b>	125	z/OS	If you make JCL changes and restart a z/OS task, Universal Controller will put the task into Confirmation Required status and prompt you for a confirmation. For detailed processing steps, see <a href="#">Rerunning a z/OS Task</a> .
<b>Defined</b>	0	All	The new task instance has been created (the task has been launched).
<b>Exclusive Requested</b>	22	All	All tasks with a <a href="#">mutually exclusive task</a> defined go immediately to a status of Exclusive Requested. If the task is available to run exclusively, the task then moves to the next appropriate processing status.
<b>Exclusive Wait</b>	23	All	The task is <a href="#">mutually exclusive</a> with one or more other tasks, and it is waiting for those tasks to finish before it will run.
<b>Execution Wait</b>	33	<a href="#">Agent-based</a>	The task must wait to be completed; either the Agent/Agent Cluster running the task has reached its Task Execution Limit, or the ability of the Agent/Agent Cluster to run tasks has been <a href="#">suspended</a> .
<b>Failed</b>	140	All*	The task ran to a failure status.
<b>Finished</b>	190	All	The task was forced by the user to finish. The user may do this in cases where the task had a Cancelled or Failed status, and the user needed to release other task instances depending on the successful completion of this task instance in a workflow. For more information, see <a href="#">Force Finishing a Task</a> .
<b>Held</b>	20	All	The task has been put on hold by a user.
<b>In Doubt</b>	110	<a href="#">Agent-based</a>	The Agent is "in doubt" about the current status of the task instance. This may occur if an Agent or Agent connection goes down. In this case, the Agent restarts and reviews its data about tasks in progress. If the Agent finds a task still running, it resumes normal monitoring. If the Agent cannot find the task, this usually indicates that the task completed, but the Agent considers the task status to be "in doubt."
<b>Queued</b>	40	<a href="#">Agent-based</a>	The task has been queued on a resource.
<b>Resource Requested</b>	25	All	All tasks with a <a href="#">virtual resource</a> defined go immediately to a status of Resource Requested. If the resource is available, the task then moves to the next appropriate processing status.
<b>Resource Wait</b>	30	All	All tasks with a <a href="#">virtual resource</a> defined go immediately to a status of Resource Requested. If the resource is not available, the task goes to a status of Resource Wait. When the resource becomes available, the task moves to the next appropriate processing status
<b>Running</b>	80	All	The task is running. For Agent-based tasks, the Agent has started running the program.
<b>Running/Problems</b>	81	Workflow	One or more tasks within the workflow has one of the following statuses: <ul style="list-style-type: none"> <li>• Cancelled</li> <li>• Confirmation Required</li> <li>• Failure</li> <li>• In Doubt</li> <li>• Running/Problems (for sub-workflows)</li> <li>• Start Failure</li> <li>• Undeliverable</li> </ul>
<b>Skipped</b>	180	All	The task was skipped by a user.
<b>Start Failure</b>	120	All	The task was unable to start.
<b>Started</b>	70	<a href="#">Agent-based</a> , Manual	The task has started. For Agent-based tasks, this means the Agent has received the task.
<b>Step Restarted</b>	45	z/OS	The task has been re-run starting from a specific <a href="#">z/OS jobstep</a> .
<b>Submitted</b>	43	z/OS	The task has been submitted to the z/OS Job Entry subsystem and scheduled by the z/OS Job Scheduler.
<b>Success</b>	200	All	The task has completed successfully. Workflows will transition to Success status when all of its tasks have transitioned to Success, Finished, or Skipped status.

<b>Time Wait</b>	15	All (except Timer)	The task is waiting to start based on a Wait To Start and/or Delay On Start specification.
<b>Undeliverable</b>	35	<a href="#">Agent-based</a>	The Agent is unavailable.
<b>Waiting</b>	10	All	The task has been loaded by a workflow and is waiting on a predecessor.

\* Workflows cannot go to Failed status.

## Agent-Based Task Types

The following task types are Agent-based task types:

- Linux/Unix
- Windows
- z/OS
- Universal Command
- SAP
- File Transfer
- File Monitor
- FTP File Monitor
- System Monitor

## Task Instance Status Colors

You can change the default color assigned to each task instance status via the [Colors](#), in the **Reporting** navigation pane.

## Retrieving Output

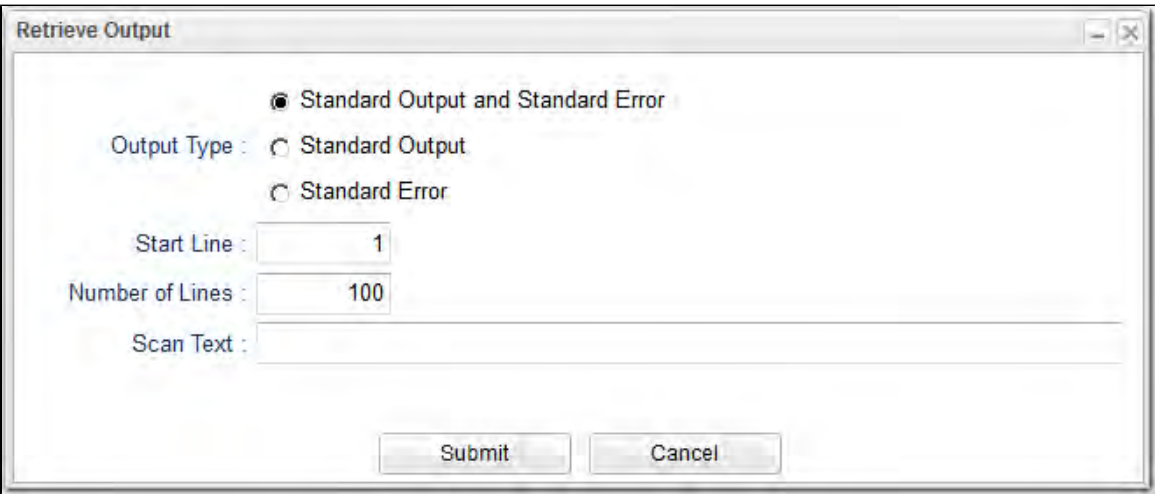
- Overview
- Retrieve the Output
- Retrieve Output Field Descriptions

### Overview

For any running or completed task where output (for example, standard out and/or standard error) has been generated and you did not specify that output be [automatically retrieved](#), you can instruct Universal Controller to retrieve the output.

### Retrieve the Output


<b>Step 1</b>	From the <a href="#">Automation Center</a> navigation pane, select <b>Task Instances &gt; Activity</b> or <b>Task Instances &gt; Task Instances</b> to display the <a href="#">Activity Monitor</a> or <a href="#">Task Instances list</a> .
<b>Step 2</b>	Display the task instance Details for the task whose output you want to retrieve.
<b>Step 3</b>	Access the <a href="#">Action menu</a> . If output is available for the task instance, click <b>Retrieve Output....</b> The Retrieve Output dialog displays.



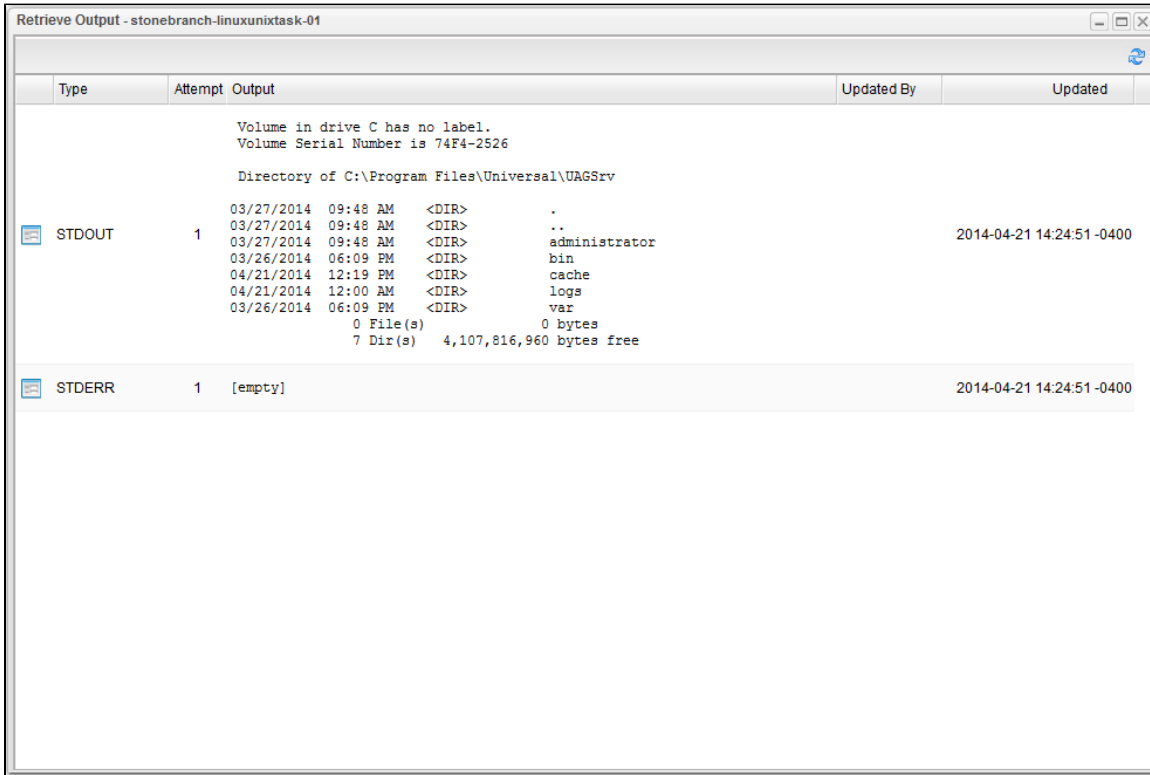
If the selected task is a z/OS task, the Retrieve Output dialog contains a single **Output Type** selection:



**Step 4** Using the field descriptions below as a guide, make your selection. Positioning can be accomplished by using **Start Line** or **Scan Text** fields to see the **Number of Lines** both before and after the first match of text.

 **Note**  
If you want to retrieve data starting at the end of a file, enter **-1** in the **Start Line** field and the number of lines to retrieve in the **Number of Lines** field.

**Step 5** Click the **Submit** button. The Controller retrieves the output you specified and displays a Retrieve Output pop-up containing the requested type of output. (It also writes the output to the **Output** tab of the task instance.)



## Retrieve Output Field Descriptions

Field Name	Description
Standard Output and Standard Error	Retrieve both standard output and standard error information returned by the program.
Standard Output	Retrieve standard output only.
Standard Error	Retrieve standard error output only.
z/OS Job Log	Z/OS tasks only; Retrieve information from the z/OS job log.
Start Line	Retrieve data beginning at the line indicated. <ul style="list-style-type: none"> <li>• If a <b>Start Line</b> value is not specified in the task instance Details, the default is 1.</li> <li>• If the <b>Start Line</b> value is <b>-1</b>, data will be retrieved starting at the end of the file.</li> </ul>
Number of Lines	Limit the retrieved data to the <b>Number of Lines</b> value in the task instance Details. If a <b>Number of Lines</b> value is not specified, default is the value of the <b>Retrieve Output Default Maximum Lines</b> Universal Controller system property.



Scan Text:	Regex pattern that the Controller will search for a match for in STDOUT/STDERR (or z/OS job log). The Controller will include the Number of Lines above and below the first line matched.  if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
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