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## **Opswise Controller 6.1.x**

# **Application Monitoring and Control**

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# Application Monitoring and Control



## Application Monitoring and Control

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# Application Monitoring and Control Overview

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## Application Monitoring and Control

The Application Monitoring and Control feature of Opwise Controller allows you to use it as a network control and monitoring tool. You can use Application Monitoring and Control to start, stop, and query any application running on any machine where you have [Opwise Universal Agent](#) installed and running.

Application Monitoring and Control is comprised of three components:

- [Application resource records](#) allow you to define the name and location of your applications, along with the specific commands to control (Start, Stop, and Query) the applications. The [Applications list](#) displays a status for the application that is defined in each Application resource record.
- Three [Application Control tasks](#) are automatically generated when you create an Application resource record: one each for executing the Start, Stop, and Query commands (which you specified in the Application resource record) against the application. You can use these control tasks to schedule the Start, Stop, and Query commands in Workflows and triggers. You also can manually create customized Application Control tasks.



### Note

You can manually run an Application Control task to execute a command specified in an Application resource record, but it is simpler to just execute the command from the Applications list or Application resource record.

- Optional [Application Monitor triggers](#) allow you to launch other tasks based on the status of an application being monitored.

## Processing Flow

The following steps show a sample process flow for the manual monitoring (that is, not via a trigger or Workflow) of an application:

<b>Step 1</b>	From the <a href="#">Agents &amp; Connections</a> navigation pane, select <b>System &gt; Applications</b> and <a href="#">create an Application resource record</a> , specifying the name of an application and the start, stop, and query commands to control it. The Controller will automatically create three <a href="#">Application Control tasks</a> that you can use in Workflows and triggers for starting, stopping, and querying the application.
<b>Step 2</b>	Start the application defined in the Application resource record either by: <ul style="list-style-type: none"> <li>• Right-clicking the Application resource record in the Applications list and clicking <b>Start</b> on the displayed <a href="#">Action menu</a>.</li> <li>• Opening the Application resource record and clicking the <b>Start</b> button in the <a href="#">Application Details</a>.</li> </ul>
<b>Step 3</b>	The Controller executes the <a href="#">Start Command</a> provided by the user in the <a href="#">Application Details</a> . It puts the application into Starting status, and saves the <a href="#">Start Time</a> .  The Start Command has two functions: <ol style="list-style-type: none"> <li>1. Starts the application.</li> <li>2. Starts the query process that monitors the application.</li> </ol>
<b>Step 4</b>	After 30 seconds, the Controller automatically executes the <a href="#">Query Command</a> provided by the user in the <a href="#">Application Details</a> to determine the status of the application. The Controller continues executing the Query Command every 120 seconds thereafter until the user stops the monitoring by issuing a <a href="#">Stop command</a> from the Controller.

<b>Step 5</b>	<p>The purpose of the Query is to determine whether or not the application is Active. The Controller uses the specifications provided by the user in the <a href="#">Query Exit Code Processing</a> fields in <a href="#">Application Details</a> to make this determination.</p> <ul style="list-style-type: none"> <li>• If the response from the application indicates a successful start-up, the Controller puts the application into Active status.</li> <li>• If the response indicates the Application has not started, the Controller continues executing the Query (keeping track in the <a href="#">Startup Query Attempts</a> field) until it reaches the maximum attempts specified by the user in the <a href="#">Startup Query Maximum</a> field. If the maximum number is reached before achieving an Active status, the Controller puts the application into Impaired status. However, the Controller continues monitoring the application. If the appropriate exit code parameters are eventually returned, the Controller will put the application into Active status. The purpose of the Startup Query Attempts field is to avoid having the application go straight into Impaired status if it takes awhile to start.</li> </ul> <p>The Controller writes any Exit Code captured by the Query in the <a href="#">Query Exit Code</a> field of the Application resource record.</p>
<b>Step 6</b>	<p>After starting the application, the Controller continues monitoring by sending out the Query Commands every 120 seconds.</p> <ul style="list-style-type: none"> <li>• If the Controller detects a problem based on the Exit Code parameters, it puts the application into Impaired status. If this occurs, you have several options for handling the problem, with increasing levels of automation: <ol style="list-style-type: none"> <li>1. The <a href="#">Applications list</a> displays the status of all applications being monitored. You can <a href="#">create a filter</a> for the Applications list that displays only those applications in a specific status, such as Impaired. If you see a problem, troubleshoot the issue and restart the application from outside the Controller.</li> <li>2. Set up an <a href="#">Application Monitor trigger</a> that monitors the application for Impaired and other problem statuses. When the trigger is satisfied, it launches an <a href="#">Email task</a> that sends emails to support personnel, notifying them of the problem. Several <a href="#">built-in variables</a> are supported that allow you to pass required data into the email message: the application name, type, and status.</li> <li>3. You also could create a <a href="#">Workflow</a> launched by an <a href="#">Application Monitor trigger</a> looking for Impaired or other problem statuses. The Workflow can include <a href="#">Application Control tasks</a> that attempt to resolve the problem by stopping and then restarting the application. You could also include any other tasks that are specific to troubleshooting the application.</li> </ol> </li> <li>• If the Controller fails to get a response to a Query for three minutes, it puts the application into &lt;status&gt;/Query Overdue status, where &lt;status&gt; is the last known status of the application, either Starting, Active, or Impaired. For example, you may see a &lt;status&gt;/Query Overdue status if the Agent went down or there was some other problem on the machine unrelated to the application itself. If this occurs, you should troubleshoot the issue. When you have fixed the problem, the continued queries from the Controller will then return an Active status for the application.</li> </ul>
<b>Step 7</b>	<p>To stop monitoring an application, issue the Stop command against it. the Controller stops the application and puts it into Inactive status, which means it is no longer monitoring.</p>

# Application Resources

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- [Built-In Variables](#)
- [Creating an Application Resource Record](#)
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  - [Application Details Field Descriptions](#)

## Overview

Application resource records are the core component of the Opswise Controller [Application Monitoring and Control](#) feature.

These records define:

- Names of the applications being monitored.
- Name and location of the machines where they are running.
- Start, Stop, and Query commands needed to perform the monitoring and control functions.

You can also use Application records and their associated [Application Control tasks](#) to start, stop, and query applications as part of your scheduling processes. You can execute Application Control tasks as you would execute any other task and include them in Workflows where applicable. In addition, you can define [Application Monitor triggers](#) to automatically launch one or more tasks of any type, depending on the status of one or more applications. For example, you might set up an Application Monitor trigger that sends an email to Windows technical support personnel if any Windows application goes to Impaired or Inactive status.

In order for the Controller to access the application, the application must be installed on a machine where [Opswise Universal Agent](#) (for Windows, Linux/Unix, or z/OS) is running.

If you set up the Controller to monitor your applications, you should always start and stop the applications from within the Controller. If you stop an application outside the Controller, you must also restart it from outside the Controller. If the Controller detects a problem with an application (the application goes to Impaired status), you should troubleshoot the problem and restart the application outside the Controller. The Controller will continue monitoring and when it detects that the application is back up, it will put the application back into Active status.

## Built-In Variables

[Application Monitor built-in variables](#) are provided to pass information about an application being monitored into the task or tasks being launched by the trigger. You can pass the information into the launched tasks by including the variables in a text field in the task definition.

## Creating an Application Resource Record

**Step 1** From the [Agents & Connections](#) navigation pane, select **System > Applications**. The Applications list displays a list of all currently defined Application resource records.

Below the list, Application Details for a new Application resource record displays. (You also can click the **New** button to display Application Details for a new Application resource record.)

The screenshot shows the 'Applications' section of the Opwise Controller. At the top, there is a list of 5 applications, all of type 'Windows Service'. The list includes columns for Application Name, Application Type, Start Time, Last Query, Status, Updated By, and Updated. Below the list, the 'Application Details' form is visible, showing fields for Application Name, Version, Business Services, Application Type, Windows Agent, Environment Variables, Runtime Directory, and Start Command.

Application Name	Application Type	Start Time	Last Query	Status	Updated By	Updated
stonebranch-application-01	Windows Service	2014-06-27 15:10:46 -0400	2014-07-02 15:43:39 -0400	Impaired	stonebranch-user-01	2014-06-13 15:36:36 -0400
stonebranch-application-02	Windows Service			Inactive	stonebranch-user-02	2014-06-13 15:36:42 -0400
stonebranch-application-03	Windows Service			Inactive	stonebranch-user-03	2014-06-13 15:36:46 -0400
stonebranch-application-04	Windows Service			Inactive	stonebranch-user-04	2014-06-13 15:36:51 -0400
stonebranch-application-05	Windows Service			Inactive	stonebranch-user-05	2014-06-13 15:36:55 -0400

**Step 2** Enter/select Details for a new Application resource record, 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 temporarily [hide the list](#).



**Note**

If you view [Application Details](#) for an existing Application resource record by clicking an Application in the list, and then want to create a new Application resource record, you must click the **New** button that displays above and below the Details.

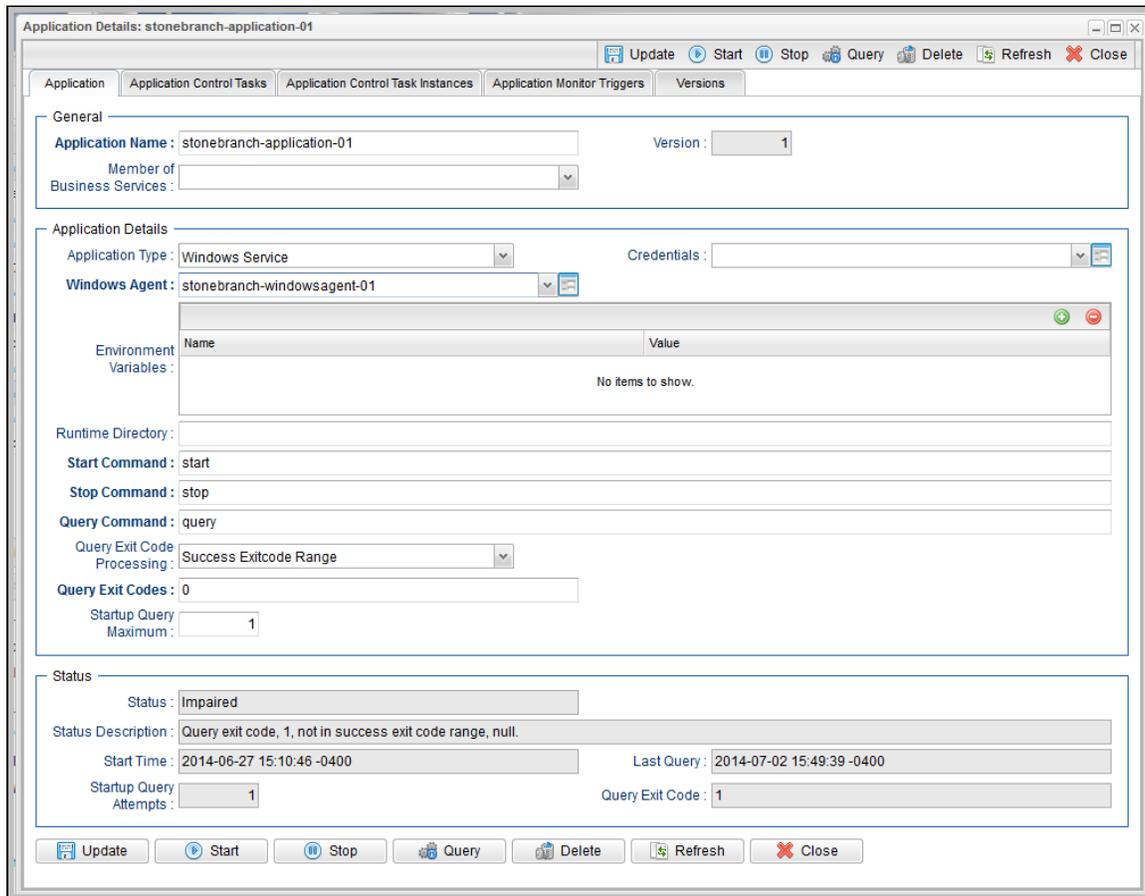
**Step 3** Click the **Save** button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

When you save a new Application resource record, the Controller also automatically creates three related [Application Control Tasks](#), one each for starting, stopping, and querying the application.

**Step 4** If appropriate, repeat these steps for any additional Application resource records that you want to add.

## Application Details

The following Application Details is for an existing Application resource record. See the [field descriptions](#), below, for a description of all fields that may display in the Application Details.



## Application Details Field Descriptions

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

Field Name	Description
<b>General</b>	This section contains general information about the application.
Application Name	Name used within the Controller to identify this resource. Up to 40 alphanumeric characters. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for resources.
Version	Version number of the current record, which is incremented by the Controller every time a user updates a record. Click on the Versions tab to view previous versions. For details, see <a href="#">Record Versioning</a> .
Member of Business Services	User-defined; allows you to select one or more Business Services that this Application resource belongs to. Click on the lock icon to unlock the field and select a <a href="#">Business Service</a> .
<b>Application Details</b>	This section contains assorted detailed information about the application.
Application Type	User-defined; Type of application.  Options: <ul style="list-style-type: none"> <li>• Windows Service</li> <li>• Linux/Unix Daemon</li> <li>• z/OS Started Task</li> </ul>

Credentials	<p>Login <a href="#">credentials</a> that the Controller will use to access the remote machine.</p> <div style="background-color: #ffffcc; padding: 5px; margin-top: 10px;">  <b>Note</b>  For z/OS application resources, make sure the credentials are in upper case. </div>
Agent	Name of the Windows, Linux/Unix, or z/OS agent where the application will run.
Run as sudo	For Linux/Unix agents only; instruction to run the command as Sudo (superuser do).
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>
Runtime Directory	Directory where the application executes. <a href="#">Variables</a> supported.
Start Command	Command used to start the application. This can be any process or command that starts the application. If you try to start an application monitor that is already started, you will see the message: Application already monitored with <status> status.
Stop Command	Command used to stop the application. This can be any process or command that stops the application.
Query Command	Command used to query the application. This can be any process or command that queries the application. You must first start the application monitor from the Controller before you can query the application.
Query Exit Code Processing	<p>Specifies how the Controller should determine whether or not the application is running.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Success Exitcode Range - Application goes to or remains in Active status if its exit code falls within the range specified in the Query Exit Codes field (see below). Otherwise it has Impaired status.</li> <li>• Failure Exitcode Range - Application goes to or remains in Impaired status if its exit code falls within the range specified in the Exit Codes field (see below). Otherwise it has Active status.</li> <li>• Success Output Contains - Application goes to or remains in Active status if its output contains the text specified in the Scan Output For field (see below). Otherwise it has Impaired status.</li> <li>• Failure Output Contains - Application goes to or remains in Impaired status if its output contains the text specified in the Scan Output For field (see below). Otherwise it has Active status.</li> </ul>
Query Exit Code	System-supplied if <a href="#">Query Exit Code Processing</a> = <b>Success Exitcode Range</b> or <b>Failure Exitcode Range</b> ; the most recent exit code returned by the application in response to a query.
Output Type	<p>If <a href="#">Query Exit Code Processing</a> = <b>Success Output Contains</b> or <b>Failure Output Contains</b>; 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	If <a href="#">Query Exit Code Processing</a> = <b>Success Output Contains</b> or <b>Failure Output Contains</b> ; string that the Controller should scan for in the output.
Output File	If <a href="#">Output Type</a> = <b>File</b> ; path and name of the file.
Startup Query Maximum	Maximum number of Query attempts to be made on the specified application.
<b>Status</b>	This section contains information about the current status of the task application.

<b>Status</b>	<p>System-supplied; indicates the current status of the application.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Inactive - Application is not being monitored by the Controller.</li> <li>• Start Failure - Application failed to start. This may occur, for example, if you have problems with credentials or the start command itself is incorrect. When this occurs, the Controller is not monitoring the application. You should troubleshoot the problem and restart the application from the Controller.</li> <li>• Starting - Start command has been executed.</li> <li>• Active - Application has successfully started and is running, based on the parameters specified in the Exit Code processing fields.</li> <li>• Impaired - An application that is being monitored returned a response that, based on the specified exit code parameters, indicates it is not running. If this occurs, you should troubleshoot the problem and restart the application from outside the Controller. Unless you issue a stop command, the Controller continues monitoring during this process. When the application comes back up, the query process will recognize this and return the application to Active status.</li> </ul>
<b>Status Description</b>	System-supplied; a more detailed status message describing why a status change occurred, in the format: "Query exit code <in-not in> <success-failure> exit code range. Query <success-failure> output not found."
<b>Start Time</b>	System-supplied; Date and time that the application was last started by the Controller.
<b>Last Query</b>	System-supplied; date and time of the last query response received from the application.
<b>Startup Query Attempts</b>	System-supplied; Number of queries that were executed before the Application went into Active or Impaired status.
<b>Query Exit Code</b>	<p>Required if <a href="#">Query Exit Code Processing</a> = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format is numeric.</p> <p>Use commas to list a series of discontinuous exit codes; use hyphens to specify a series of continuous exit codes. For example: 1,5,11, 22-30.</p>
<b>Buttons</b>	This section identifies the buttons displayed above and below the Application Details 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 application.
<b>Start</b>	Executes the Start command associated with this Application resource and begins querying.
<b>Stop</b>	Executes the Stop command associated with this Application resource. the Controller stops the application and stops querying (monitoring).
<b>Query</b>	Executes the Query command associated with this Application resource. This allows you to get immediate status of the application instead of waiting for the next automated query.
<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 the Details.
<b>Tabs</b>	This section identifies the tabs across the top of the Application Details that provide access to additional information about this Application resource.
<b>Application Control Tasks</b>	Lists all Application Control tasks associated with this Application resource.
<b>Application Control Task Instances</b>	Lists all Application Control task instances associated with this Application resource.
<b>Application Monitor Triggers</b>	Lists all Application Monitor triggers associated with this Application resource.

## Application Control Tasks

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### Overview

Application Control tasks allow you to execute a Start, Stop, or Query command against an application in the Opswise Controller network.

Three Application Control tasks are created automatically when you create an [Application record](#) – one each for starting, stopping, and querying the application. (The Application Control tasks list [below](#) shows automatically created tasks for five different Application records.)

Each of these automatically created tasks is stored as a separate record in the Controller database and can be executed independently or added to a workflow, as with any other task. These tasks cannot be deleted.

### Built-In Variables

Several built-in variables are provided to pass information about the Application being monitored into the task or tasks being launched by the trigger. You can pass the information into the launched tasks by including the variables in a text field in the task definition. See [Application Monitor Variables](#) for details.

### Creating an Application Control Task

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

Below the list, Application Control Task Details for a new Application Control task displays. (You also can click the **New** button to display Application Control Task Details for a new Application Control task.)

The screenshot shows the 'Application Control Tasks' interface. At the top, there is a list of 20 tasks with columns for Task Name, Task Description, Command, Updated By, and Updated. Below the list is the 'Application Control Task Details' form, which is currently empty and has several tabs: Variables, Actions, Virtual Resources, Mutually Exclusive, Instances, Triggers, Notes, and Versions. The 'General' tab is active, showing fields for Task Name, Task Description, Member of Business Services, Hold on Start, Virtual Resource Priority, Hold Resources on Failure, Application, Command, and Time Options.

**Step 2** Enter/select Details for a new Application Control 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 temporarily [hide the list](#).

 **Note**  
If you view [Application Control Task Details](#) for an existing Application Control task by clicking a task in the list, and then want to create a new Application Control task, you must click the **New** button that displays above and below 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.

## Application Control Task Details

The following Application Control Task Details is for an automatically generated Application Control task.

Some of the fields are protected and the **Generated** field is pre-selected, indicating that this task was generated automatically.

Depending on the values that you enter / select for these fields, and whether or not the Application Control 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 Application Control Task Details.

Application Control Task Details: stonebranch-application-01 #START#

Update Launch Task Copy Refresh Close

Application Control Task Variables Actions Virtual Resources Mutually Exclusive Instances Triggers Notes Versions

General

Task Name: stonebranch-application-01 #START# Version: 1

Task Description:

Member of Business Services: stonebranchbusinessservice 01

Hold on Start:

Virtual Resource Priority: 10 Hold Resources on Failure:

Application Control Details

Application: stonebranch-application-01 Command: Start

Generated:

Time Options

Late Start:

Late Finish:

Early Finish:

User Estimated Duration: HH:MM:SS

Update Launch Task Copy Refresh Close

## Application Control Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Application Control 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 40 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 display with a status of Held. 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>Application Control Details</b>	This section contains assorted detailed information about the task.
Application	Protected if auto-generated; name of the Application resource record. The Application resource defines where the software application is running; it also defines the start, stop, and query commands for the application. Enter the name of an existing Application, select an Application from the drop-down list, of all existing Applications, or click the Details icon to create a new Application.
Command	Protected if auto-generated; command that this task is executing against the software application.  Options: <ul style="list-style-type: none"> <li>• Query</li> <li>• Start</li> <li>• Stop</li> </ul>
Generated	System-supplied; protected. If selected, indicates that this Application Control task was generated automatically when the Application resource record was submitted.
<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	Time after which the task <a href="#">start time</a> is considered late. Use hh:mm, 24-hour time.
Late Start 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	<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; specifies the 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; specifies the longest amount of time this task instance should take to run. You can specify any combination of hours, minutes, and seconds.
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	If <a href="#">Early Finish Type</a> = Time; specifies the 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; specifies the shortest amount of time this task instance should take to run. You can specify any combination of hours, minutes, and seconds.
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>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.

<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>Copy</b>	Creates a copy of this task, which you are prompted to rename.										
<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 Opwise 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 Opwise 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 Opwise 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>	Displays a list of all instances of this Workflow.										

<b>Triggers</b>	Lists 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 Overview</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 Application Control Task Instance

When an Application Control 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 [Application Control Task Details](#) for that task
- [Activity list](#)
- [Task Instances list](#)

## Application Control Task Instance Details

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

## Application Control Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Application Control 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> .
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Start Time	System-supplied; date and time the task instance started.
End Time	System-supplied; date and time the task instance completed.
Queued Time	System-supplied; time the task was queued for processing.

Duration	System-supplied; amount of time the task instance took to run.
<b>Application Control Details</b>	This section contains assorted detailed information about the task instance.
Application	Protected if auto-generated; name of the Application resource record. The Application resource defines where the software application is running; it also defines the start, stop, and query commands for the application.
Command	Protected if auto-generated; command that this task is executing against the software application.  Options: <ul style="list-style-type: none"> <li>• Query</li> <li>• Start</li> <li>• Stop</li> </ul>
Generated	System-supplied; protected. If selected, indicates that this Application Control task was generated automatically when the Application resource record was submitted.
<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	Time after which the task <a href="#">start time</a> is considered late. Use hh:mm, 24-hour time.
Late Start 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	<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; specifies the 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; specifies the longest amount of time this task instance should take to run. You can specify any combination of hours, minutes, and seconds.
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; specifies the 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; specifies the shortest amount of time this task instance should take to run. You can specify any combination of hours, minutes, and seconds.
<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.
<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 this task's parent Workflow task, if any.
<b>Retrieve Output</b>	See <a href="#">Retrieving Output</a> .
<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 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 Application Control Task

You can run an Application Control task:

- Manually, by clicking the [Launch Task](#) or [Launch Task with Variables](#) button in the Application Control Tasks list or Application Control 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](#).



# Application Monitor Triggers

- [Overview](#)
- [Built-In Variables](#)
- [Creating an Application Monitor Trigger](#)
  - [Application Monitor Trigger Details](#)
  - [Application Monitor Trigger Details Field Descriptions](#)

## Overview

The Application Monitor Trigger allows you to trigger one or more tasks based on the status of:

- A specific [application resource](#).
- One or more [application resources](#), based on selection criteria you supply.

You can launch any number of tasks when the conditions in the trigger are satisfied.

When creating a trigger, if you specify [Application Monitor Condition](#) = ALL, and select all Application types, the trigger monitors all Application resource records you have defined. Any time any one of them goes to any of the statuses you specified in the [Status\(es\)](#) field, the trigger launches the task(s) specified in the [Task\(s\)](#) field. For example, you might use this trigger to send an email notification to technical support if any of the monitored applications goes into the Start Failure status.

## Built-In Variables

[Application Monitor built-in variables](#) are provided to pass information about the Application being monitored into the task(s) being launched by the trigger. You can pass the information into the launched tasks by including the variables in a text field in the task definition.

## Creating an Application Monitor Trigger

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

Below the list, Application Monitor Trigger Details for a new Application Monitor trigger displays. (You also can click the **New** button to display Application Monitor Trigger Details for a new Application Monitor trigger.)

The screenshot shows the 'Application Monitor Triggers' dashboard. At the top, there is a list of five triggers, each with a name, description, enabled status (indicated by a red 'X'), application(s) to monitor, status, updated by, and updated timestamp. Below the list is the 'Application Monitor Trigger Details' form, which includes tabs for 'Application Monitor Trigger', 'Variables', and 'Versions'. The 'General' tab is active, showing fields for Name, Description, Member of Business Services, Calendar, Time Zone, and Task(s). The Task(s) field is currently empty and displays 'No items to show.'

Name	Description	Enabled	Application(s) To Monitor	Status(es)	Updated By	Updated
stonebranch-applicationmonitortrigger-01		✘	Equals: win-test-application	Active	ops.admin	2014-06-13 14:49:14 -0400
stonebranch-applicationmonitortrigger-02		✘	Equals: win-test-application	Active	ops.admin	2014-06-13 14:49:21 -0400
stonebranch-applicationmonitortrigger-03		✘	Equals: win-test-application	Active	ops.admin	2014-06-13 14:49:26 -0400
stonebranch-applicationmonitortrigger-04		✘	Equals: win-test-application	Active	ops.admin	2014-06-13 14:49:30 -0400
stonebranch-applicationmonitortrigger-05		✘	Equals: win-test-application	Active	ops.admin	2014-06-13 14:49:34 -0400

**Step 2** Enter/select Details for a new Application Monitor trigger, 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 temporarily [hide the list](#).



**Note**

If you view [Application Monitor Trigger Details](#) for an existing Application Monitor trigger by clicking a trigger in the list, and then want to create a new Application Monitor trigger, you must click the **New** button that displays above and below the Details.

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

**Step 4** If appropriate, repeat these steps for any additional triggers you want to add.

**Step 5** Enable the trigger(s) as desired.

## Application Monitor Trigger Details

The following Application Monitor Trigger Details is for an existing Application Monitor trigger. See the [field descriptions](#), below, for a description of the fields that display in the Application Monitor Trigger Details.

The screenshot shows the 'Application Monitor Trigger Details' window for 'stonebranch-applicationmonitortrigger-01'. The window has a title bar with standard OS controls and a toolbar with buttons for Update, Enable, Trigger Now, Copy, Delete, Refresh, and Close. Below the toolbar are three tabs: 'Application Monitor Trigger' (selected), 'Variables', and 'Versions'. The main content area is divided into several sections:

- General:** Contains fields for Name (stonebranch-applicationmonitortrigger-01), Version (1), Description, Member of Business Services, Calendar (System Default), and Time Zone (System (US/Eastern)). A Task(s) list contains 'stonebranch-windowtask-01'.
- Status:** Contains Skip Count (0), Skip Trigger if Active (checkbox), and Status (Disabled).
- Application Monitor Details:** Contains Status(es) (Active), Monitoring Type (Specific Application), and Application (win-test-application).
- Restrictions:** Contains Special Restriction (checkbox).

At the bottom of the window is another toolbar with buttons for Update, Enable, Trigger Now, Copy, Delete, Refresh, and Close.

## Application Monitor Trigger Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Application Monitor Trigger Details.

Field Name	Description
<b>General</b>	This section contains general information about the trigger.
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 40 alphanumeric characters. It is the responsibility of the user to develop a workable <a href="#">naming scheme</a> for triggers.
Version	System-supplied; version number of the current record, which is incremented by the system 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> .
Description	User-defined; description of this trigger.
Member of Business Services	User-defined; allows you to select one or more <a href="#">Business Services</a> that this record belongs to.
Calendar	Calendar that defines the business days, holidays, and other special days that determine the run dates for the task(s) specified in the trigger.  Select a Calendar from the drop-down list of all existing Calendars. To display detailed information about a selected calendar, click the <a href="#">Details</a> icon next to the Calendar field.
Time Zone	User-defined; allows you to specify the time zone that will be applied to the time(s) specified in the trigger. For example, if you specify 23:00 and a time zone of Canada/Central, the task will run at 11:00 p.m. Central Canada time.

Task(s)	Name of the task(s) being triggered when this trigger is satisfied. When selecting tasks from the Details, click on the lock icon to unlock the field and <a href="#">select tasks</a> .
<b>Status</b>	This section contains information about the current status of the trigger.
Skip Count	User-defined; allows you to specify that the Controller should skip the next <i>N</i> times this task is triggered.
Skip Trigger if Active	User-defined; allows you to specify that the Controller should skip the next run of the specified task(s) if the previous run has not gone to a Complete status (that is, it is still active).
Status	User-defined; indication of whether the trigger is enabled (checked) or disabled (not checked). The user enables and disables the trigger by clicking the <a href="#">Enable</a> / <a href="#">Disable</a> buttons. Only enabled triggers are processed by the Controller.
Enabled By	System-supplied. If <b>Status</b> = Enabled, ID of the user who most recently enabled this trigger.
<b>Application Monitor Details</b>	This section contains assorted detailed information about the trigger time.
Status(es)	System-supplied; application status being monitored for.  One or more of the following: <ul style="list-style-type: none"> <li>• <b>Inactive</b> - The initial state of the Application. The Application is stopped and unmonitored.</li> <li>• <b>Start Failure</b> - The Agent experienced a failure while attempting to execute the Start command.</li> <li>• <b>Starting</b> - The Start command was executed and the Controller is waiting for Query command response.</li> <li>• <b>Active</b> - The Query command response is reporting that the Application is Active.</li> <li>• <b>Impaired</b> - The Query command response is reporting that the Application is experiencing a problem and is possibly down.</li> <li>• <b>Query Overdue</b> - The Agent is late sending the Controller an updated Query command response.</li> </ul>
Monitoring Type	Indicates whether you are monitoring one specific Application resource or want to provide selection parameters to monitor multiple Application resources. See <a href="#">Applications</a> for information about setting up Application resources.  Options: <ul style="list-style-type: none"> <li>• <b>Specific Application</b> - Use the <a href="#">Application</a> field to browse for and select the Application resource you want to monitor.</li> <li>• <b>General Applications</b> - Use the <a href="#">Application Monitor Condition</a> and <a href="#">Application Type(s)</a> fields to provide parameters for selecting which Application resources you want to monitor.</li> </ul>
Application	If <a href="#">Monitoring Type</a> = Specific Application, name of a specific application resource to be monitored.
Application Monitor Condition	If <a href="#">Monitoring Type</a> = General Application(s), allows you to specify selection parameters: <ul style="list-style-type: none"> <li>• <b>ALL</b> - Monitor all Application resources.</li> <li>• <b>Starts With</b> - Monitor all Application resources whose name starts with the string you provide in the <a href="#">Condition Value</a> field.</li> <li>• <b>Contains</b> - Monitor all Application resources whose name contains the string you provide in the <a href="#">Condition Value</a> field.</li> <li>• <b>Ends With</b> - Monitor all Application resources whose name ends with the string you provide in the <a href="#">Condition Value</a> field.</li> </ul>
Condition Value	If <a href="#">Application Monitor Condition</a> = Starts With, Contains, or Ends With; specifies the search string.

Application Type(s)	<p>If <b>Monitoring Type</b> = General Application(s), type(s) of applications to monitor. Options:</p> <ul style="list-style-type: none"> <li>• Windows Service</li> <li>• Linux/Unix Daemon</li> <li>• z/OS Started Task</li> </ul>
<b>Restrictions</b>	This section specifies any restrictions that apply to the trigger.
Special Restriction	<p>Enable this field in order to specify additional parameters that tell the Controller how to handle exceptions, such as when the trigger is satisfied on a holiday or non-business day. You can specify simple and/or complex restrictions. For example, you can specify a <b>Simple Restriction</b> that disables the trigger if it is satisfied on a holiday identified in the calendar and/or a <b>Complex Restriction</b> that disables the trigger on the last business day of every month.</p>
Simple Restriction	<p>If enabled, allows you to specify an action (see <b>Action</b> field) such as Do Not Trigger on a non-business day or holiday (see <b>Situation</b> field). For example, do not trigger on a non-business day.</p>
Situation	<p>If <b>Simple Restriction</b> is enabled, allows you to select the situation that causes the system to initiate the action specified in the <b>Action</b> field.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• On Non Business Day</li> <li>• On Holiday</li> </ul>
Action	<p>If <b>Special Restriction</b> is enabled, allows you to select an action to take on a non-business day or holiday (see <b>Situation</b> field).</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Do Not Trigger</li> <li>• Next Day (run on the next day)</li> <li>• Next Business Day (run on the next business day, as defined in the calendar)</li> <li>• Previous Day (run on the previous day)</li> <li>• Previous Business Day (run on the previous business day, as defined in the calendar)</li> </ul>
Complex Restriction	<p>If enabled, allows you to specify a set of parameters that determine one or more situations when this trigger should not be satisfied. Used in conjunction with the following fields: <b>Restriction Mode</b>, <b>Restriction Adjective</b>, <b>Restriction Noun</b>, <b>Restriction Qualifier</b>. For example, you may specify that you do not want to satisfy this trigger on the last business day of the year or the first day of each month.</p>
Restriction Mode	<p>If both <b>Simple Restriction</b> and <b>Complex Restriction</b> are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR).</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• And</li> <li>• Or</li> </ul>
Restriction Adjective	<p>If <b>Complex Restriction</b> is enabled, the type of selection.</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>• Last</li> </ul> <p>Example: The <b>last</b> business day of the month.</p>

<b>Restriction Noun</b>	<p>If <a href="#">Complex Restriction</a> is enabled, the day you want to select.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Sunday through Saturday</li> <li>• Day</li> <li>• Business Day</li> <li>• <a href="#">Custom Day</a></li> </ul> <p>Example: The last <b>business day</b> of the month.</p>
<b>Restriction Qualifier</b>	<p>If <a href="#">Complex Restriction</a> is enabled, the period you are selecting from.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• Month</li> <li>• Year</li> <li>• January through December</li> <li>• <a href="#">Custom period</a></li> </ul> <p>Example: The last quarter of the <b>year</b>.</p>
<b>Buttons</b>	This section identifies the buttons displayed above and below the Trigger 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 trigger.
<b>Enable</b>	Activates this trigger and writes your User ID to the <a href="#">Enabled By</a> field.
<b>Disable</b>	Deactivates this trigger.
<b>Trigger Now</b>	Immediately triggers all the tasks specified in this trigger.
<b>Copy</b>	Creates a copy of this trigger, 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 trigger.
<b>Tabs</b>	This section identifies the tabs across the top of the Trigger Details that provide access to additional information about the trigger.
<b>Variables</b>	Lists all <a href="#">variables</a> associated with this record.
<b>Versions</b>	Stores copies of all previous versions of the current record. See <a href="#">Record Versioning</a> .