![Stonebranch logo]

Universal Controller 6.9.x

Triggers and Calendars

Triggers and Calendars

Triggers

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The information on these pages also is located in the Universal Controller 6.9.x Triggers and Calendars.pdf.

Triggers

Triggers

A trigger specifies times and/or events that trigger the launching of one or more tasks.

When a trigger is satisfied, Universal Controller launches the tasks specified in the trigger. Each trigger can have an unlimited number of tasks associated with it. All of the specified tasks are run each time the trigger is satisfied. If you want to specify dependencies such as "run Task B only if Task A fails," create a Workflow, which is a series of inter-connected tasks.

A built-in trigger variable is available for returning the trigger name. Additional built-in variables are supported for specific trigger types.

Trigger Types

Trigger Type	Usage
Application Monitor	Trigger one or more tasks based on the status of one or more application resources.
Composite	Trigger one or more tasks based on multiple file monitoring, task monitoring, variable monitoring, and/or email monitoring events.
Cron	Specify dates and times, using Cron syntax, at which a task will be triggered.
Email Monitor	Trigger one or more Email Monitor tasks.
Agent File Monitor	Trigger one or more tasks based on the creation, deletion, or change of a file on a particular machine.
Manual	Launch task(s) immediately, while setting or overriding the value of one or more user-defined variables specified in the task(s).
Task Monitor	Trigger one or more tasks based on the conditions specified in an associated Task Monitor task.
Temporary	Set up a one-time trigger for a task, based on a single date and time.
Time	Specify dates and times at which a task will be triggered.
Variable Monitor	Trigger one or more tasks based on the conditions specified in an associated Variable Monitor task.

Creating a Trigger

There are multiple ways to create a trigger:

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

For detailed information on creating a trigger for a specific trigger type, click that trigger type in the Trigger Types table, above.
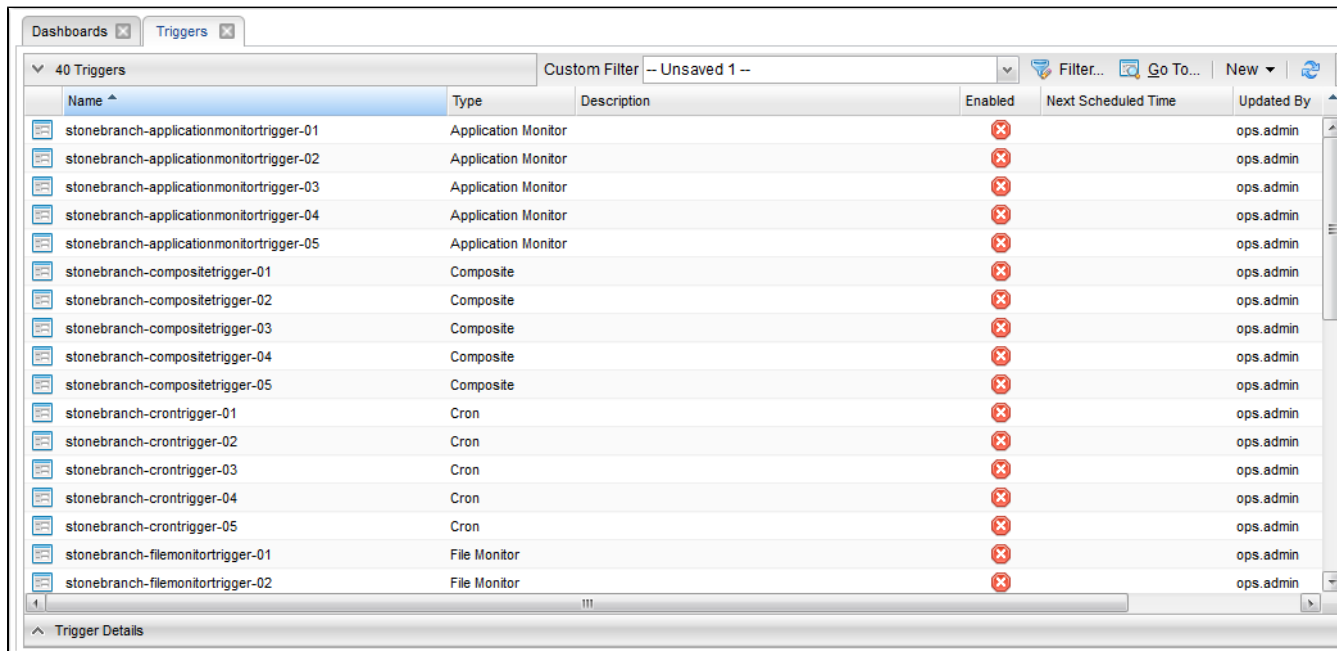
All Triggers / Active Triggers Lists

To display a list of all currently defined triggers for all trigger types, from the Automation Center navigation pane select **Triggers > All Triggers**. The All Triggers list displays.

To display a list of all currently defined and enabled triggers for all trigger types, from the Automation Center navigation pane select **Triggers > Active Triggers**. The Active Triggers list displays.

Note

⚠️

The All Triggers list and the Active Triggers list display the same columns of information about triggers.

All Triggers / Active Triggers Lists Information

The following table provides a description of the default columns that display on the All Triggers and Active Triggers lists.

For information about customizing this list, including filtering, sorting, searching, and other list features, see Record Lists.

Column	Description
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 255 alphanumerics. It is the responsibility of the user to develop a workable naming scheme for triggers.
Type	User-defined; type of trigger. Options: • Composite • CRON • Time • Temporary • Manual • Email Monitor • Agent File Monitor • Task Monitor • Variable Monitor • Application Monitor
Description	User-defined; description of this trigger.
Next Scheduled Time	System-supplied; for time-based triggers. If Status = Enabled, the next date and time this trigger will be satisfied. See Displaying Trigger Forecast Information.
Enabled	User-defined; indication of whether the trigger is enabled (checked) or disabled (not checked). The user enables and disables the trigger by clicking the Enable Trigger / Disable Trigger buttons. Only enabled triggers are processed by the Controller. Note If the Confirm Enable/Disable Trigger Command Universal Controller system property is set to yes, a confirmation pop-up displays if a user selects to enable or disable a trigger.
Updated By	User that triggered or last updated this trigger.
Updated	Date and time this trigger was triggered or last updated.

<Trigger Type> Triggers List

If you select **Triggers ><Trigger Type>** from the Automation Center navigation pane, a triggers list for that selected trigger type displays.

For example:

<Trigger Type> Triggers List Information

The default columns that display on a <Trigger Type> Triggers list are specific to that type of trigger.

Trigger Details

When you click the Details icon for a trigger in a Triggers List, the Trigger Details displays all currently defined information for that trigger.

Cron Trigger Details: stonebranch-crontrigger-01

[Update] [Enable] [Trigger Now...] [List Qualifying Times...] [Copy] [Delete] [Refresh] [Close]

Cron Trigger | Variables | Versions

General

Name : stonebranch-crontrigger-01

Version : 15

Description :

Member of Business Services :

Calendar : System Default

Time Zone : Server (America/New_York)

Task(s) : stonebranch-windowstask-01

Execution User : ops.admin

Purge By Retention Duration : ☐

Forecast : ☐

Simulate : True

Status

Status : Disabled

Disabled By : ops.admin

Disabled Time : 2020-05-28 09:21:52 -0400

Skip Details

Task Launch Skip Condition : -- None --

Skip Restriction : On

Skip Count : 0

Skip Date List :

Dates

2020-06-01

2020-06-02

Cron Details

Minutes : 0

Day Logic : And

Hours : 1-3

Day of Month : 25-28

Month : 8

Day of Week : *

Cron Criteria : 0 1-3 25-28 8 *

Restrictions

Special Restriction : ☐

[Update] [Enable] [Trigger Now...] [List Qualifying Times...] [Copy] [Delete] [Refresh] [Close]

For information on Details for a specific trigger type, click the appropriate link in Trigger Types, above.

For information on how to access additional details - such as Metadata and complete database Details - for triggers (or any type of record), see Records.

Daylight Saving Time

For Cron and Time triggers, the Controller handles the switch to and from Daylight Saving Time as described below.

How the time change is handled differs between interval-based times (such as "every 15 minutes") and absolute times (such as "2:30 a.m.").

Interval-Based Times

For interval-based time Cron and Time triggers, the behavior is the same.

When Time Moves Forward

An interval-based time Cron or Time trigger defined to run at a time that is being skipped due to the time change will also be "skipped," as shown in the following example; the time zone is Eastern (EST) and the time changes from 2 a.m. EST to 3 a.m. on March 12. In this case, the 15 minute interval trigger will run at the following times:

```
Sunday, March 12, 2017 00:00:00 EST -0500
Sunday, March 12, 2017 00:15:00 EST -0500
Sunday, March 12, 2017 00:30:00 EST -0500
Sunday, March 12, 2017 00:45:00 EST -0500
Sunday, March 12, 2017 01:00:00 EST -0500
Sunday, March 12, 2017 01:15:00 EST -0500
Sunday, March 12, 2017 01:30:00 EST -0500
Sunday, March 12, 2017 01:45:00 EST -0500
Sunday, March 12, 2017 03:00:00 EDT -0400
Sunday, March 12, 2017 03:15:00 EDT -0400
Sunday, March 12, 2017 03:30:00 EDT -0400
Sunday, March 12, 2017 03:45:00 EDT -0400
```

When Time Moves Back

A Time or Cron trigger defined to run at a time that is being repeated due to the time change will also be repeated, as shown in the following example; the time zone is Eastern (EST) and the time changes from 2 a.m. EST to 1 a.m. on November 5. In this case, the 15 minute interval trigger will run at the following times:

```
Sunday, November 05, 2017 00:00:00 EDT -0400
Sunday, November 05, 2017 00:15:00 EDT -0400
Sunday, November 05, 2017 00:30:00 EDT -0400
Sunday, November 05, 2017 00:45:00 EDT -0400
Sunday, November 05, 2017 01:00:00 EDT -0400
Sunday, November 05, 2017 01:15:00 EDT -0400
Sunday, November 05, 2017 01:30:00 EDT -0400
Sunday, November 05, 2017 01:45:00 EDT -0400
Sunday, November 05, 2017 01:00:00 EST -0500
Sunday, November 05, 2017 01:15:00 EST -0500
Sunday, November 05, 2017 01:30:00 EST -0500
Sunday, November 05, 2017 01:45:00 EST -0500
Sunday, November 05, 2017 02:00:00 EST -0500
Sunday, November 05, 2017 02:15:00 EST -0500
Sunday, November 05, 2017 02:30:00 EST -0500
Sunday, November 05, 2017 02:45:00 EST -0500
Sunday, November 05, 2017 03:00:00 EST -0500
Sunday, November 05, 2017 03:15:00 EST -0500
Sunday, November 05, 2017 03:30:00 EST -0500
Sunday, November 05, 2017 03:45:00 EST -0500
```

Absolute Times

For absolute time Cron and Time triggers, the behavior is different.

Cron Trigger

Basic Behavior

The behavior of the Cron trigger follows the standard Cron behavior as described in the man page for Cron.

Each line has five time and date fields, followed by a user name if this is the system `crontab` file, followed by a command. Commands are executed by cron(8) when the minute, hour, and month of year fields match the current time, and at least one of the two day fields (day of month, or day of week) match the current time. This means that non-existent times, such as "missing hours" during daylight saving conversion, will never match, causing jobs scheduled during the "missing times" not to be run. Similarly, times that occur more than once (again, during daylight savings conversion) will cause matching jobs to be run twice.

When Time Moves Forward

A Cron trigger defined to run at a time that is being skipped due to the time change will also be skipped.

For example: A trigger is defined for every Sunday at 2:30 a.m. On March 12, 2017, the time changes from 2 a.m. EST to 3 a.m., so on March 12 the 2:30 a.m. run is skipped and runs the following Sunday at 2:30 a.m.

When Time Moves Back

A Cron trigger defined to run at a time that is being repeated due to the time change will also be repeated.

For example: A trigger is defined for every Sunday at 1:30 a.m. On November 5, 2017, the time changes from 2 a.m. EDT to 1 a.m., so on November 5 the 1:30 a.m. run is repeated, as shown below:

```
Sunday, November 05, 2017 01:30:00 EDT -0400
Sunday, November 05, 2017 01:30:00 EST -0500
```

Time Trigger

When Time Moves Forward

A Time trigger defined to run at a time that is being skipped due to the time change will run as though the time did not change; however, the recorded run time will be one hour later.

For example: A trigger is defined for every Sunday at 2:30 a.m. On March 12, 2017, the time changes from 2 a.m. EST to 3 a.m. EST, so on March 12 the 2:30 a.m. run fires at 3:30. The following Sunday, and henceforth, it runs at 2:30 a.m., as shown below:

```
Sunday, March 05, 2017 02:30:00 EST -0500
Sunday, March 12, 2017 03:30:00 EDT -0400
Sunday, March 19, 2017 02:30:00 EDT -0400
Sunday, March 26, 2017 02:30:00 EDT -0400
```

When Time Moves Back

A Time trigger defined to run at a time that is being repeated due to the time change will not be repeated.

For example: A trigger is defined for every Sunday at 1:30 a.m. On November 5, 2017, the time changes from 2 a.m. EDT to 1 a.m. EST, so on November 5 the 1:30 a.m. run fires once, as shown below:

```
Sunday, October  29, 2017 01:30:00 EDT -0400
Sunday, November 05, 2017 01:30:00 EDT -0400
Sunday, November 12, 2017 01:30:00 EST -0500
Sunday, November 19, 2017 01:30:00 EST -0500
Sunday, November 26, 2017 01:30:00 EST -0500
```

Additional Information

The following pages provide additional information for triggers:

- Enabling and Disabling Triggers
- Copying Triggers
- Triggering with Variables
- Triggering by Date and Time
- Displaying Trigger Forecast Information

Cron Trigger

Overview

The Cron trigger, similar to the Time trigger, allows you to specify dates and times at which a task will be triggered.

With both Cron and Time triggers, you can define:

- Simple date and times, such as "every weekday at 12:00 a.m."
- Specific dates and times, such as "March 15 at 12:00 a.m."
- A series of dates and times, such as "every Friday at every hour."
- A mixture of specific dates/times and a series, such as "every Monday at 9 a.m."
- Complex dates and times, such as "every 3 hours between 8 a.m. and 5 p.m. on the last business day of the year."

(Read Daylight Saving Time for details about how Universal Controller handles Daylight Saving Time.)

It is recommended that you use a Cron trigger, rather than a Time trigger, if you want to schedule non-standard time intervals for a triggering a task (see Scheduling a Time Interval, below).

Cron Syntax

The Cron trigger uses standard Cron syntax. Once the Cron trigger is entered into the system, the Controller interprets it and processes it as it would any other trigger. The trigger is satisfied when the current date and time match all the values specified in the Minutes, Hours, Day of Month, Month, and Day of Week fields.

Cron Fields

The following table identifies the allowed values for the time and date fields that are used to specify the Cron Criteria in the Cron Trigger Details.

Field Name	Required	Allowed Values	Allowed Special Characters
Minutes	Yes	0-59	* / , -
Hours	Yes	0-23	* / , -
Day of Month	Yes	1-31	* / , -
Month	Yes	1-12 or JAN-DEC	* / , -
Day of Week	Yes	0-7 or SUN (0 or 7)-SAT	* / , -

Note

⚠️

The day when a Cron trigger launches can be specified by two fields: Day of Month and Day of Week. If both fields are restricted (that is, they both are not *), the trigger launches based on the Day Logic field value. If Day Logic is set to **Or**, when either Day field matches, the trigger can launch. For example: 30 4 1,20 * 5 would cause the trigger to launch at 4:30 a.m. on the 1st and 20th of each month, as well as on every Friday. If, however, Day Logic is set to **And**, the trigger would launch at 4:30 a.m. only on days that are the 1st or 20th which are also a Friday.
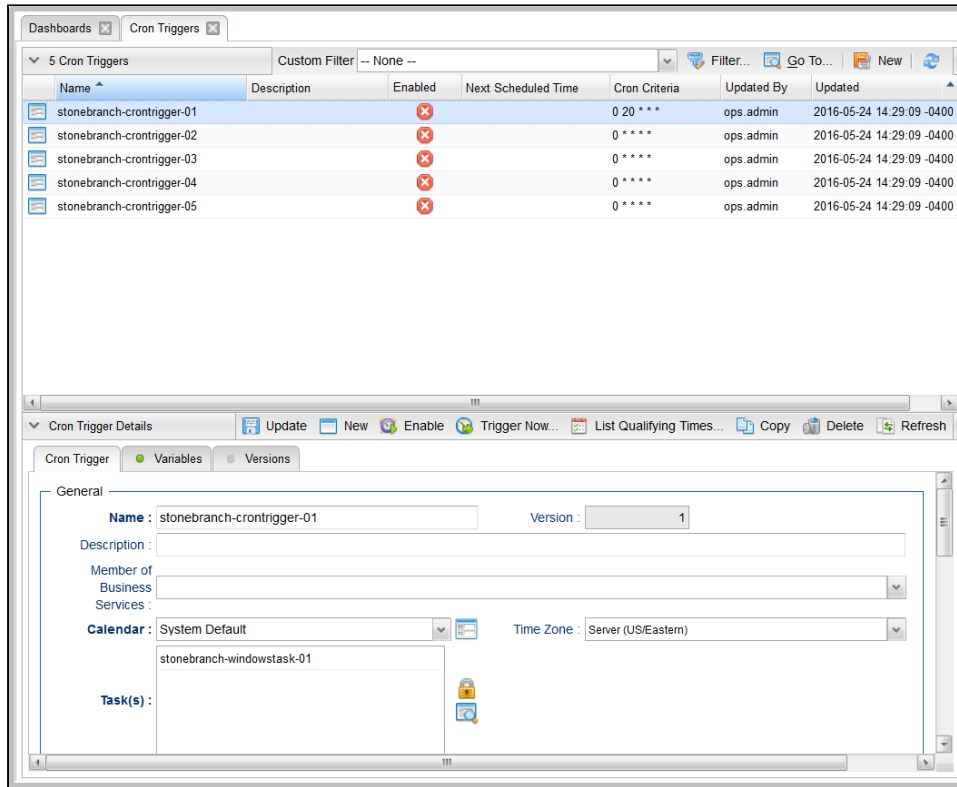
Cron Special Characters

Asterisk (*)	An asterisk indicates that the expression matches for all values of the field. For example, using * in the Month field indicates every month.	
Slash (/)	A slash describes an increment of ranges. For example, **5-50/15** in the Minutes field indicate the fifth minute of the hour and every 15 minutes thereafter until the 50th minute (5,20,35,50).	
Hyphen (-)	Defines a range of numbers, which are two numbers separated by a hyphen. The specified range is inclusive. For example, **9-17** in the Hours field means from 9 a.m. to 5 p.m., inclusive.	
Comma (,)	Separates items in a list. A list is a set of numbers or ranges separated by commas. For example, **1,5-9,18-20** in the Hours field indicate the following hours 1,5,6,7,8,9,18,19,20.	

Cron Criteria Examples

Cron Criteria	Description
0 3 30 4,6,9,11 5	At 3 a.m. on the 30th of the month, for months with exactly 30 days, if the 30th is a Friday.
0 3 31 * 0	At 3 a.m. on the 31st of the month if the 31st is a Sunday.
0 3 22-28 * 0	At 3 a.m. on the 4th Sunday of every month.
0 5-19/7 * * *	Every 7 hours between 5 a.m. and 7 p.m., daily.
0 5,12,19 * * 1,3	Every 7 hours between 5 a.m. to 7 p.m. on Monday and Wednesday.
0 9-17 * * Mon-Fri	Every hour between 9 a.m. and 5 p.m. from Monday to Friday.
0 2-11/3 * * *	Every 3 hours between 2 a.m. and 11 a.m., daily.
0 3 29 2 *	At 3 a.m. on February 29th.
30 1-3,17 * * 1,3,5	At 30 minutes past the hours of 1 a.m., 2 a.m., 3 a.m., and 5 p.m. on Monday, Wednesday, and Friday.

Creating a Cron Trigger

Step 1	From the Automation Center navigation pane, select **Triggers > Cron Triggers**. The Cron Triggers list displays.
	Below the list, Cron Trigger Details for a new Cron trigger displays.
Step 2	Enter/select Details for a new Cron 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 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 a **Save** button. The trigger is added to the database, and all buttons and tabs in the Trigger Details are enabled.
Step 4	Enable the trigger(s) as desired.

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).

Cron Trigger Details

The following Cron Trigger Details is for an existing Cron trigger. See the field descriptions, below, for a description of the fields that display in the Cron Trigger Details.

Cron Trigger Details: stonebranch-crontrigger-01

📥 Update   ⚙ Enable   🌐 Trigger Now...   📅 List Qualifying Times...   📋 Copy   🗑 Delete   💲 Refresh   ❌ Close

Cron Trigger   ○ Variables   ● Versions

General

Name : stonebranch-crontrigger-01   Version : 15

Description :

Member of
Business
Services :

Calendar : System Default   Time Zone : Server (America/New_York)

Task(s) : stonebranch-windowstask-01   🔒
                                        🔍   Execution User : ops.admin

Purge By Retention
Duration : ☐

Forecast : ☐   Simulate : True

Status

Status : Disabled

Disabled By : ops.admin   Disabled Time : 2020-05-28 09:21:52 -0400

Skip Details

Task Launch Skip
Condition : -- None --

Skip Restriction : On   Skip Count : 0

Skip Date List :

Dates
2020-06-01
2020-06-02

Cron Details

Minutes : 0   Day Logic : And

Hours : 1-3

Day of Month : 25-28

Month : 8

Day of Week : *

Cron Criteria : 0 1-3 25-28 8 *

Restrictions

Special
Restriction : ☐

📥 Update   ⚙ Enable   🌐 Trigger Now...   📅 List Qualifying Times...   📋 Copy   🗑 Delete   💲 Refresh   ❌ Close

Cron Trigger Details Field Descriptions

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

Field Name	Description
General	This section contains general information about the trigger.
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 255 alphanumerics. It is the responsibility of the user to develop a workable naming scheme 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 Versions tab to view previous versions. For details, see Record Versioning.
Description	User-defined; description of this trigger.
Member of Business Services	User-defined; allows you to select one or more Business Services that this record belongs to. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
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 Details 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 select tasks.
Purge By Retention Duration	Specification for whether triggered task instances can be purged by retention duration.
Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.
Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366.

Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: • Hours • Days
Execution User	Read-only; Execution user that has been selected (via the Assign Execution User action) to override the execution user of task instances being launched by the trigger.
Forecast	If checked, the Controller calculates the date and time when this trigger will be satisfied for the next number of days, as specified in the Forecast Period In Days Universal Controller system property. The Controller writes the forecasting entries to the Forecasts List. Note ⚠ If this field is checked on a trigger and the trigger is promoted, it will not be checked for that trigger on the target system.
Simulate	Enables the override of the Enable Trigger Simulation Universal Controller system property specification for whether or not to simulate the launching of tasks when triggers are eligible to fire. (If simulation is enabled, only the scheduled launch of the task by the trigger is inhibited.) Options: • **-- System Default --** - Use the system default for enabling / disabling trigger simulation as specified by Enable Trigger Simulation. • **True** - Enable trigger simulation • **False** - Disable trigger simulation.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Next Scheduled Time	System-supplied; for time-based triggers. If Status = Enabled, the next date and time this trigger will be satisfied. See Displaying Trigger Forecast Information.
Enabled By	System-supplied. If Status = Enabled, ID of the user who most recently enabled this trigger.
Disabled By	System-supplied; If Status = Disabled, ID of the user who most recently disabled this trigger. (By default, all new triggers are disabled.)
Enabled Time	System-supplied. If Status = Enabled, Date and time that the trigger was enabled.
Disabled Time	System-supplied. If Status = Disabled, Date and time that the trigger was disabled.
Skip Details	This section contains detailed information about skipping the trigger.

Task Launch Skip Condition	User-defined; Controls when launching a task for the trigger will be skipped.
	Default is the value of the Trigger Task Launch Skip Condition Default Universal Controller system property.
	Options:
	-- None -- Do not skip the task launch. - Active Skip the task launch if a previous instance is still active. - Active By Trigger Skip the task launch if a previous instance launched by the trigger is still active.
	Task Launch Skip Condition is not applicable when using the **Trigger Now...** command and will be ignored.
Skip Restriction	User-defined; Specification for when this trigger should skip and not launch the task(s).
	Options:
	- - None - - No skip restrictions - Before Trigger will skip if the current date and time is before the specified Skip Before Date and Skip Before Time values. - After Trigger will skip if the current date and time is after the specified Skip After Date and Skip After Time values. - Span Trigger will skip if the date and time qualifies based upon the specified Skip After Date, Skip After Time, Skip Before Date, and Skip After Date values.
	⚠ Note
	If Skip After Date and Skip After Time are prior to the Skip Before Date and Skip Before Time, the Span is a "between" period. In this case, if the triggered time is after the Skip After Date and Skip After Time **as well as** before the Skip Before Date and Skip Before Time, the Trigger will skip and not launch the configured Task(s).
	If the Skip Before Date and Skip Before Time are prior to the Skip After Date and Skip After Time, the Span is a "not between" period. In this case, if the triggered time is **either** after the Skip After Date and Skip After Time **or** before the Skip Before Date and Skip Before Time, then the trigger will skip and not launch the configured Task(s).
	On Trigger will skip on any of the dates specified in the Skip Date LIst.
	Default is - - None - -.
Skip Count	User-defined; Allows you to specify that the Controller should skip the next *N* times this task is triggered.
	Skip Count is not applicable when using the **Trigger Now...** command and will be ignored.
Skip Before Date	If Skip Restriction is Before or Span; Date before which the Trigger will skip.
Skip Before Time	If Skip Restriction is Before or Span; Time before which the Trigger will skip on the specified Skip Before Date.

Skip After Date	If Skip Restriction is After or Span; Date after which the Trigger will Skip.
Skip After Time	If Skip Restriction is After or Span; Time after which the Trigger will skip on the specified Skip After Date.
Skip Date List	If Skip Restriction is On; List of dates on which the trigger will skip.
Cron Details	This section contains assorted detailed information about the trigger.
Minutes	Time in minutes, using standard Cron syntax.
Hours	Time in hours, using standard Cron syntax. (See also Daylight Saving Time.)
Day of Month	Day of the month, using standard Cron syntax.
Month	Required. Month, using standard Cron syntax.
Day of Week	Day of the week, using standard Cron syntax.
Cron Criteria	System-supplied; summary of the Cron specifications. Also displays in the **Cron Criteria** column on the Cron Triggers list.
Day Logic	Specification for whether to **And** the Day of Month with the Day of Week criteria or to **Or** the Day of Month with the Day of Week criteria.
Restrictions	This section specifies any restrictions that apply to the trigger.
Special Restriction	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 Simple Restriction that disables the trigger if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the trigger on the last business day of every month.

Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday
Complex Restriction	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: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. 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.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.

Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.
Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.
Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N. If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Trigger Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.

Enable	Activates this trigger and writes your User ID to the Enabled By field.
Disable	Deactivates this trigger.
Trigger Now...	Immediately triggers all the tasks specified in this trigger. Optionally, you also can select to: • Launch the task(s) specified in the trigger with one or more variables. • Launch the task(s) specified in the trigger by a specified date and time. • Launch the task(s) specified in the trigger but place them in Held status; they will not run until they are released. Note ⚠ If you click **Trigger Now...** for an Enabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of the Enabled By user. If you click **Trigger Now...** for a Disabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of your user name and ID. If you click **Trigger Now...** for an Enabled or Disabled trigger that has an assigned Execution User, the trigger will launch its task(s) under the context of the assigned Execution User.
List Qualifying Times	Lets you generate a list of future dates and times that the trigger will trigger the specified task (see Generating a List of Qualifying Times, below).
Copy	Creates a copy of this trigger, which you are prompted to rename.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this trigger.
Tabs	This section identifies the tabs across the top of the Trigger Details that provide access to additional information about the trigger.
Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Scheduling a Time Interval

A Cron trigger lets you schedule a time interval for how often a task will be triggered. You also can select a time frame that restricts the time during which the trigger is active, so that a task will be triggered only at the time intervals within that time frame.
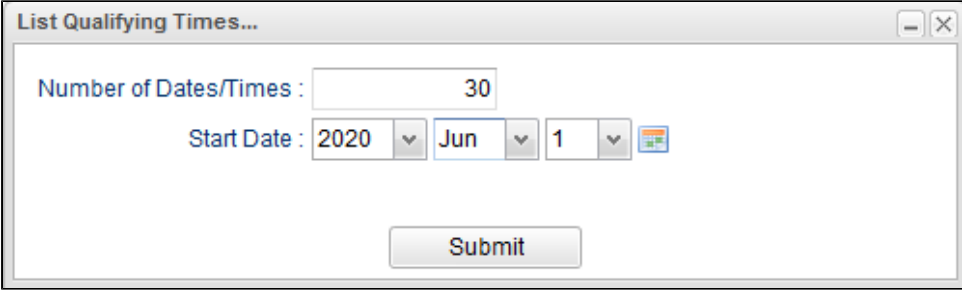
The time interval for a Cron trigger resets at the end of the day; when the 24-hour clock expires, the time interval count begins again at 12 a.m. on the next specified day. Therefore, if you select a time interval for multiple days, the task will be triggered at the same times each day.

Although you also can use a Time trigger to schedule a time interval for a task to be triggered on multiple days, you should use a Cron trigger if the time interval is not one by which the 24-hour clock is even divisible (2, 3, 4, 6, 8, and 12), such as in the Cron criteria examples, above. Using a Time trigger to schedule this type of time interval could produce unexpected results, since the time interval for a Time trigger does not reset at the end of the day. It continues into the next day, regardless of the 24-hour clock (see Scheduling a Time Interval with a Time Trigger).

Conversely, if you want to trigger a task on multiple days at a time interval without regard to the time of day, and the interval is not one by which the 24-hour clock is even divisible, you must use a Time trigger, which will not reset at the end of the day. For example, if you want to trigger a task every 5 hours, from Monday to Friday, without regard to the time of day, a Time trigger will allow you to trigger the task on Monday at 12 a.m., 5 a.m., 10 a.m., 3 p.m., 8 p.m. and then next (5 hours later) on Tuesday at 1 a.m.. This time interval scheduling cannot be accomplished with a Cron trigger.

Generating a List of Qualifying Times

The Controller allows you to generate a list of future dates and times that a trigger will trigger the specified task.

Step 1	Click the List Qualifying Times button in the Cron Trigger Details. The List Qualifying Times Input dialog displays. ![List Qualifying Times dialog showing Number of Dates/Times: 30, Start Date: 2020 Jun 1, and a Submit button]
Step 2	Select a Number of Dates/Times (1 - 1000) that you want to list. The default is 30.
Step 3	Select a Start Date from when you want the list to begin.
Step 4	Click the **Submit** button to generate the list. For example:

Qualifying Times   [−][□][×]

stonebranch-crontrigger-01

📅 Listing From: 2020-06-01 14:02:25 -0400   🖨

User/Trigger Timezone: America/New_York
Tue, Aug 25, 2020 01:00:00 EDT -0400
Tue, Aug 25, 2020 02:00:00 EDT -0400
Tue, Aug 25, 2020 03:00:00 EDT -0400
Wed, Aug 26, 2020 01:00:00 EDT -0400
Wed, Aug 26, 2020 02:00:00 EDT -0400
Wed, Aug 26, 2020 03:00:00 EDT -0400
Thu, Aug 27, 2020 01:00:00 EDT -0400
Thu, Aug 27, 2020 02:00:00 EDT -0400
Thu, Aug 27, 2020 03:00:00 EDT -0400
Fri, Aug 28, 2020 01:00:00 EDT -0400
Fri, Aug 28, 2020 02:00:00 EDT -0400
Fri, Aug 28, 2020 03:00:00 EDT -0400
Wed, Aug 25, 2021 01:00:00 EDT -0400
Wed, Aug 25, 2021 02:00:00 EDT -0400
Wed, Aug 25, 2021 03:00:00 EDT -0400
Thu, Aug 26, 2021 01:00:00 EDT -0400
Thu, Aug 26, 2021 02:00:00 EDT -0400
Thu, Aug 26, 2021 03:00:00 EDT -0400
Fri, Aug 27, 2021 01:00:00 EDT -0400
Fri, Aug 27, 2021 02:00:00 EDT -0400
Fri, Aug 27, 2021 03:00:00 EDT -0400
Sat, Aug 28, 2021 01:00:00 EDT -0400
Sat, Aug 28, 2021 02:00:00 EDT -0400

```
Sat, Aug 28, 2021 02:00:00 EDT -0400
Sat, Aug 28, 2021 03:00:00 EDT -0400
Thu, Aug 25, 2022 01:00:00 EDT -0400
Thu, Aug 25, 2022 02:00:00 EDT -0400
Thu, Aug 25, 2022 03:00:00 EDT -0400
Fri, Aug 26, 2022 01:00:00 EDT -0400
Fri, Aug 26, 2022 02:00:00 EDT -0400
Fri, Aug 26, 2022 03:00:00 EDT -0400
```

Time Trigger

Overview

The Time trigger, similar to the Cron trigger, allows you to specify dates and times at which a task will be triggered.

With both Time and Cron triggers, you can define:

- Simple date and times, such as "every weekday at 12:00 a.m."
- Specific dates and times, such as "March 15 at 12:00 a.m."
- A series of dates and times, such as "every Friday at every hour."
- A mixture of specific dates/times and a series, such as "every Monday at 9 a.m."
- Complex dates and times, such as "every 3 hours between 8 a.m. and 5 p.m. on the last business day of the year."

(Read Daylight Saving Time for details about how Universal Controller handles Daylight Saving Time.)

If you want to schedule time intervals for triggering a task on multiple days, use the trigger type (Time or a Cron) that allows you to most accurately select the scheduling parameters (see Scheduling a Time Interval, below).

Creating a Time Trigger

Step 1	From the Automation Center navigation pane, select **Triggers > Time Triggers**. The Time Triggers list displays. Below the list, Time Trigger Details for a new Time trigger displays.
Step 2	Enter/select Details for a new Time 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 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 a **Save** button. The trigger is added to the database, and all buttons and tabs in the Trigger Details are enabled.
Step 4	Enable the trigger(s) as desired.
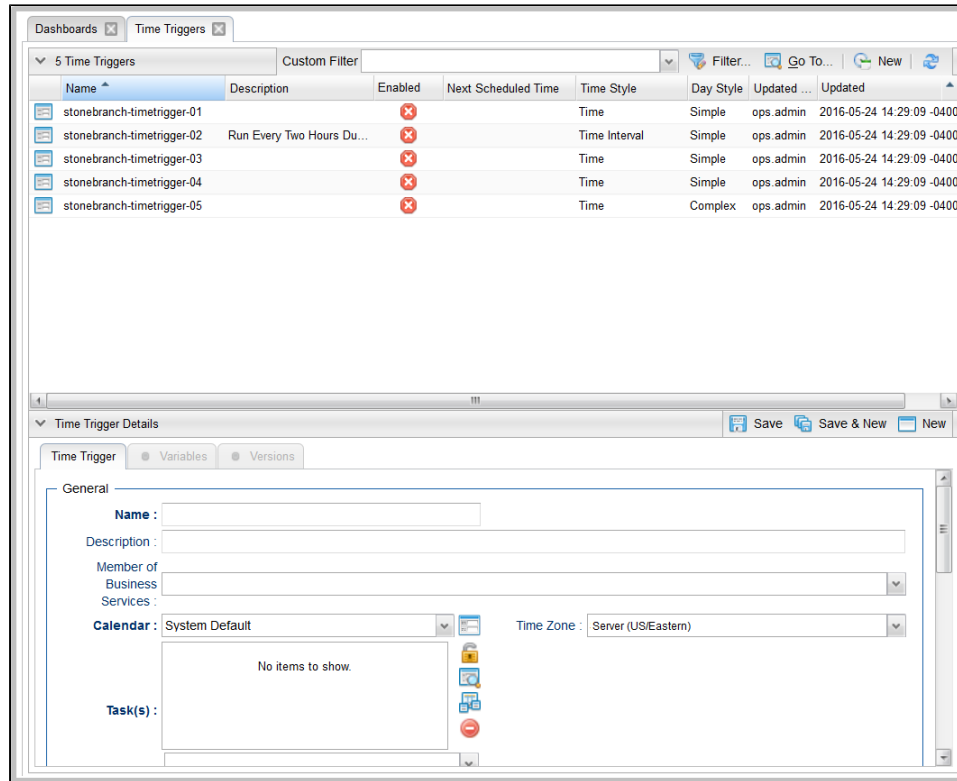
Note

⚠️

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).

Time Trigger Details

The following Time Trigger Details is for an existing Time trigger. See the field descriptions below for a description of the fields that display in the Time Trigger Details.

Time Trigger Details Field Descriptions

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

Field Name	Description
General	This section contains general information about the trigger.
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 255 alphanumerics. It is the responsibility of the user to develop a workable naming scheme 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 Versions tab to view previous versions. For details, see Record Versioning.
Description	User-defined; description of this trigger.
Member of Business Services	User-defined; allows you to select one or more Business Services that this record belongs to. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
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 Details 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 select tasks.
Purge By Retention Duration	Specification for whether triggered task instances can be purged by retention duration.
Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.

Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366.
Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: • Hours • Days
Execution User	Read-only; Execution user that has been selected (via the Assign Execution User action) to override the execution user of task instances being launched by the trigger.
Forecast	If checked, the Controller calculates the date and time when this trigger will be satisfied for the next number of days, as specified in the Forecast Period In Days Universal Controller system property. The Controller writes the forecasting entries to the Forecasts List. Note ⚠ If this field is checked on a trigger and the trigger is promoted, it will not be checked for that trigger on the target system.
Simulate	Enables the override of the Enable Trigger Simulation Universal Controller system property specification for whether or not to simulate the launching of tasks when triggers are eligible to fire. (If simulation is enabled, only the scheduled launch of the task by the trigger is inhibited.) Options: • **-- System Default --** - Use the system default for enabling / disabling trigger simulation as specified by Enable Trigger Simulation. • **True** - Enable trigger simulation • **False** - Disable trigger simulation.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Next Scheduled Time	System-supplied; for time-based triggers. If Status = Enabled, the next date and time this trigger will be satisfied. See Displaying Trigger Forecast Information.
Enabled By	System-supplied. If Status = Enabled, ID of the user who most recently enabled this trigger.
Disabled By	System-supplied; If Status = Disabled, ID of the user who most recently disabled this trigger. (By default, all new triggers are disabled.)
Enabled Time	System-supplied. If Status = Enabled, Date and time that the trigger was enabled.
Disabled Time	System-supplied. If Status = Disabled, Date and time that the trigger was disabled.

Skip Details	This section contains detailed information about skipping the trigger.

Task Launch Skip Condition	User-defined; Controls when launching a task for the trigger will be skipped.
	
	Default is the value of the Trigger Task Launch Skip Condition Default Universal Controller system property.
	
	Options:
	
	- -- None --
	  Do not skip the task launch.
	- Active
	  Skip the task launch if a previous instance is still active.
	- Active By Trigger
	  Skip the task launch if a previous instance launched by the trigger is still active.
	
	Task Launch Skip Condition is not applicable when using the **Trigger Now...** command and will be ignored.

Skip Restriction	User-defined; Specification for when this trigger should skip and not launch the task(s).
	
	Options:
	
	- - - None - -
	  No skip restrictions
	- Before
	  Trigger will skip if the current date and time is before the specified Skip Before Date and Skip Before Time values.
	- After
	  Trigger will skip if the current date and time is after the specified Skip After Date and Skip After Time values.
	- Span
	  Trigger will skip if the date and time qualifies based upon the specified Skip After Date, Skip After Time, Skip Before Date, and Skip After Date values.
	
	  Note
	
	  ⚠️ If Skip After Date and Skip After Time are prior to the Skip Before Date and Skip Before Time, the Span is a "between" period. In this case, if the triggered time is after the Skip After Date and Skip After Time **as well as** before the Skip Before Date and Skip Before Time, the Trigger will skip and not launch the configured Task(s).
	
	  If the Skip Before Date and Skip Before Time are prior to the Skip After Date and Skip After Time, the Span is a "not between" period. In this case, if the triggered time is **either** after the Skip After Date and Skip After Time **or** before the Skip Before Date and Skip Before Time, then the trigger will skip and not launch the configured Task(s).
	- On
	  Trigger will skip on any of the dates specified in the Skip Date LIst.
	
	Default is - - None - -.

Skip Count	User-defined; Allows you to specify that the Controller should skip the next N times this task is triggered. Skip Count is not applicable when using the **Trigger Now...** command and will be ignored.
Skip Before Date	If Skip Restriction is Before or Span; Date before which the Trigger will skip.
Skip Before Time	If Skip Restriction is Before or Span; Time before which the Trigger will skip on the specified Skip Before Date.

Skip After Date	If Skip Restriction is After or Span; Date after which the Trigger will Skip.
Skip After Time	If Skip Restriction is After or Span; Time after which the Trigger will skip on the specified Skip After Date.
Skip Date List	If Skip Restriction is On; List of dates on which the trigger will skip.
Time Details	This section contains assorted detailed information about the trigger.

Time Style	Specifies whether this trigger is for a specific time or a series of times.
	
	Options:
	
	• Time - Triggers the task at a specific time.
	    • Required field: Time.
	• Time Interval - Triggers the task at specific intervals of times.
	    • Required fields: Time Interval, Time Interval Units.
	    • Optional fields: Enable Offset, Restrict Times.

Time	Required if Time Style = Time; time of the trigger in hours and minutes, using 24-hour time. For example, 01:45 means trigger the task at 1:45 a.m.; 13:45 means trigger the task at 1:45 p.m. (See also Daylight Saving Time.)
Time Interval	Required if Time Style = Time Interval; number of Time Interval Units. For example, for a Time Interval of every three hours, specify 3 in this field and select **Hours** in the Time Interval Units field. Note ⚠️ See Scheduling a Time Interval, below, for information on using a Time Trigger to schedule a time interval for triggering a task. Also see Time Trigger Minimum Frequency In Seconds Universal Controller system property to the define the minimum time interval that must be used.
Time Interval Units	Required if Time Style = Time Interval; Type of time interval. Used in conjunction with the Time Interval field. For example, for a Time Interval of every three hours, specify 3 in the Time Interval field and select **Hours** in this field. Options: • Seconds • Minutes • Hours
Enable Offset	If Time Style = Time Interval, allows you to define (in the Initial Time Offset field) a starting time, in minutes offset from the hour, for the trigger to run.

Initial Time Offset (hh:mm)	If Enable Offset is selected, allows you to define a starting time, in minutes offset from the hour.
	The default value (*) lets you select a starting hour (0 to 23) other than the next hour.
	For example:
	• If you want the task to run every 30 minutes at the :15 and :45 minute mark, you would select Time Interval = 30, Time Interval Units = minutes, and Initial Time Offset = *:15. • If you want the task to run every 30 minutes at the :15 and :45 minute mark starting at 6:15 p.m., you would select Time Interval = 30, Time Interval Units = minutes, and Initial Time Offset = 18:15.
Day Details	This section contains assorted detailed information about the trigger day.
Day Style	Allows you to indicate when this trigger will be run:
	Options:
	• Simple Trigger is run every day, on business days, or on one or more specific days, depending on what you select in the Daily, Business Days, and Specific Day(s) fields (see below). • Complex Trigger is run on one or more days selected by a formula specified using the Date Adjective, Date Noun, and Date Qualifier fields (see below). • Every Trigger is run at an interval of a specified number of days (see Day Interval, below) starting on a specified date (see Interval Start, below).
Daily	If Day Style = Simple, allows you to specify that the trigger is active every day of the week.
Business Days	If Day Style = Simple, allows you to specify that the trigger is active on the business days specified in the calendar selected in the Calendar field.
Specific Day(s)	If Day Style = Simple, allows you to specify one or more specific days of the week that the trigger is active in the calendar selected in the Calendar field.
Date Adjective	If Day Style = Complex, allows you to specify which in a series of days you want to select. Used in conjunction with the Date Noun and the Date Qualifier fields.
	For example, to specify "the 15th business day of the month," select Date Adjective = Nth, Date Noun = Business Day, Date Qualifier = Month, and Nth Amount = 15.
	Options:
	• Every • 1st • 2nd • 3rd • 4th • Nth • Last
Nth Amount	If Day Adjective = Nth, allows you to specify the value of N.

Date Noun	If Day Style = Complex, allows you to specify the type of day you want to select. Used in conjunction with the Date Adjective and the Date Qualifier fields. For example, to specify "the 15th business day of the month," select Date Adjective = Nth, Date Noun = Business Day, Date Qualifier = Month, and Nth Amount = 15. This drop-down menu is populated as follows: • Sunday through Saturday • Day = any day • Business Day = The business days specified in the calendar selected in the Calendar field. • Any Custom Days specified in the calendar selected in the Calendar field.
Date Qualifier	If Day Style = Complex, allows you to specify the period for your selection formula. Used in conjunction with the Date Noun and Date Adjective fields. For example, to specify "the 15th business day of the month," select Date Adjective = Nth, Date Noun = Business Day, Date Qualifier = Month, and Nth Amount = 15. Options: • Month • Year • Week • January through December • Custom Period (see Creating Custom Days)
Date Adjustment	If Day Style = Complex, allows you to adjust your date setting by a less or plus number of Days or Business Days. For example, to specify the 2nd to last day of the month (last day of the month less one day), select Date Adjective = Last, Date Noun = Day, Date Qualifier = Month, Data Adjustment = Less, Adjustment Amount = 1, and Adjustment Type = Day. Options: • None • Less • Plus Default is None.
Adjustment Amount	Required if Day Adjustment = Less or Plus; Allows you to specify the number of Days or Business Days to adjust your date setting. Maximum is 366. Default is 1.
Adjustment Type	If Day Adjustment = Less or Plus, allows you to specify the type of day by which to adjust your date setting. Options: • Day • Business Day
Day Interval	If Day Style = Every, allows you to specify the interval (in days) at which this trigger will run.

Interval Start	If Day Style = Every, allows you to specify the first day of the interval on which this trigger will run.
Restrictions	This section specifies any restrictions that apply to the trigger.
Restrict Times	If Time Style = Time Interval, period during which the trigger is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the trigger should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the trigger should be active. Use 24-hour time.
Adjust Interval To Enabled Start	If Restrict Times is enabled; Specification for whether to always begin at the Enabled Start, regardless of the time interval, or to begin based on the actual interval. If Adjust Interval To Enabled Start is not selected, the start time and end time specify only the time frame/window during which the trigger is active; they do not modify the actual time interval (see Restrict Times).
Special Restriction	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 Simple Restriction that disables the trigger if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the trigger on the last business day of every month.
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday
Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)

Complex Restriction	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: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. 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.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.
Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.

Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N. If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Trigger Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Enable	Activates this trigger and writes your User ID to the Enabled By field.
Disable	Deactivates this trigger.

Trigger Now...	Immediately triggers all the tasks specified in this trigger. Optionally, you also can select to: • Launch the task(s) specified in the trigger with one or more variables. • Launch the task(s) specified in the trigger by a specified date and time. • Launch the task(s) specified in the trigger but place them in Held status; they will not run until they are released. Note ⚠️ If you click **Trigger Now...** for an Enabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of the Enabled By user. If you click **Trigger Now...** for a Disabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of your user name and ID. If you click **Trigger Now...** for an Enabled or Disabled trigger that has an assigned Execution User, the trigger will launch its task(s) under the context of the assigned Execution User.
List Qualifying Times	Lets you generate a list of future dates and times that the trigger will trigger the specified task (see Generating a List of Qualifying Times, below).
Copy	Creates a copy of this trigger, which you are prompted to rename.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this trigger.
Tabs	This section identifies the tabs across the top of the Trigger Details that provide access to additional information about the trigger.
Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Scheduling a Time Interval

A Time trigger time interval lets you specify how often a task will be triggered, but for triggering a task on multiple days, you may not be able to specify the same time every day that the task will be triggered. This could produce unexpected results.

By default, a time interval count begins at 12 a.m.. If you schedule a time interval for a task to be triggered on multiple days, the task will be triggered at the first specified time interval, and then again whenever the time interval is reached. When the 24-hour clock expires, the time interval count does not reset to 12 a.m.; it continues into the next day. If the time interval is not one by which the 24-hour clock is even divisible (2, 3, 4, 6, 8, and 12), the task will be triggered at different times than on the first day.

Note
⚠️
See Daylight Saving Time for information on how it impacts time intervals.

For example, if you want a task to be triggered at the same time every 4 hours from Monday to Friday, a Time trigger will trigger the task on Monday at 4 a.m., 8 a.m., 12 p.m., 4 p.m., 8 p.m., and Tuesday at 12 a.m.. 4 hours later, at 4 a.m. - it will again start triggering the task every 4 hours. Since the time interval (4) divides evenly into 24, the task is triggered at the same time every day, and results will be as expected.

However, if you want a task to be triggered every 7 hours from Monday to Friday, a Time trigger will trigger the task on Monday at 7 a.m., 2 p.m., and 9 p.m., and then - 7 hours later - Tuesday at 4 a.m. The time interval "rolls over" to the next day. It does not restart at 12:00 a.m. when the 24-hour clock expires, and so the task will not be triggered at the same time every day. The same results will occur if you use Restrict Times, below, for the time interval.

Therefore, for scheduling time intervals by which the 24-hour clock is not evenly divisible, it is recommended that instead you use a Cron trigger.

For example:

Time Details

Time Style : Time Interval

Time Interval : 4   Enable Offset : ☐

Time Interval Units : Hours

Restrict Times

If you are triggering a task on a time interval, the Restrict Times field lets you select a time frame during which the trigger is active. The task will be triggered at the specified time interval only when the time interval occurs during the specified Restrict Times.

For example, if you want a task to be triggered every 4 hours from Monday to Friday and only between the hours of 8 a.m. (Enabled Start) and 7 p.m. (Enabled End), a Time trigger will check the time on Monday at 4 a.m., 8 a.m., 12 p.m., 4 p.m., 8 p.m., and Tuesday at 12 a.m., but only will trigger the task at 8:00 a.m., 12 p.m., and 4 p.m. (the only three 4-hour interval times between 8 a.m. and 7 p.m.). On Tuesday at 12 a.m., it will continue checking the time every 4 hours and will trigger the task at the same times it did on Monday.

However, if you want a task to be triggered every 7 hours from Monday to Friday and only between the hours of 8 a.m. and 7 p.m., a Time trigger will check the time on Monday at 12 a.m., 7 a.m., 2 p.m., and 9 p.m., but only will trigger the task at 2 p.m. (the only 7-hour interval time between 8 a.m. and 7 p.m.). On Monday at 9 p.m., it will continue checking the time every 7 hours, beginning on Tuesday at 4 a.m., and will trigger the task on Tuesday at 11 a.m. and 6 p.m. (both of which are 7-hour interval times between 8 a.m. and 7 p.m.).

For example:

Restrictions

Restrict Times : ☑

Enabled Start : Hour 00 Min 00   Adjust Interval To Enabled Start : ☐

Enabled End : Hour 00 Min 00

Special Restriction : ☐

Generating a List of Qualifying Times

The Controller allows you to generate a list of future dates and times that a trigger will trigger the specified task.

Step 1	Click the List Qualifying Times button in the Time Trigger Details. The List Qualifying Times Input dialog displays. **List Qualifying Times...** — ✕ Number of Dates/Times : 30 Start Date : 2020 ⌄ Jun ⌄ 1 ⌄ 🗓 Submit
Step 2	Select a Number of Dates/Times (1 - 1000) that you want to list. The default is 30.
Step 3	Select a Start Date from when you want the list to begin.
Step 4	Click the **Submit** button to generate the list. For example:

Qualifying Times ▭☐✕

stonebranch-timetrigger-01

📅 Listing From: 2020-06-01 00:00:00 –0400   🖨

User/Trigger Timezone: America/New_York
Thu, Oct 01, 2020 18:55:55 EDT –0400
Thu, Oct 01, 2020 21:55:55 EDT –0400
Mon, Oct 05, 2020 00:55:55 EDT –0400
Mon, Oct 05, 2020 03:55:55 EDT –0400
Mon, Oct 05, 2020 06:55:55 EDT –0400
Mon, Oct 05, 2020 09:55:55 EDT –0400
Mon, Oct 05, 2020 12:55:55 EDT –0400
Mon, Oct 05, 2020 15:55:55 EDT –0400
Mon, Oct 05, 2020 18:55:55 EDT –0400
Mon, Oct 05, 2020 21:55:55 EDT –0400
Tue, Oct 06, 2020 00:55:55 EDT –0400
Tue, Oct 06, 2020 03:55:55 EDT –0400
Tue, Oct 06, 2020 06:55:55 EDT –0400
Tue, Oct 06, 2020 09:55:55 EDT –0400
Tue, Oct 06, 2020 12:55:55 EDT –0400
Tue, Oct 06, 2020 15:55:55 EDT –0400
Tue, Oct 06, 2020 18:55:55 EDT –0400
Tue, Oct 06, 2020 21:55:55 EDT –0400
Wed, Oct 07, 2020 00:55:55 EDT –0400
Wed, Oct 07, 2020 03:55:55 EDT –0400
Wed, Oct 07, 2020 06:55:55 EDT –0400
Wed, Oct 07, 2020 09:55:55 EDT –0400
Wed, Oct 07, 2020 12:55:55 EDT –0400

```
Wed, Oct 07, 2020 15:55:55 EDT -0400
Wed, Oct 07, 2020 18:55:55 EDT -0400
Wed, Oct 07, 2020 21:55:55 EDT -0400
Thu, Oct 08, 2020 00:55:55 EDT -0400
Thu, Oct 08, 2020 03:55:55 EDT -0400
Thu, Oct 08, 2020 06:55:55 EDT -0400
Thu, Oct 08, 2020 09:55:55 EDT -0400
```

Manual Trigger

- Overview
- Creating a Manual Trigger and Triggering One or More Tasks
    - Manual Trigger Details
    - Manual Trigger Details Field Descriptions
- Entering Variables
    - Using the Trigger with Variables Menu Option
    - Using the Variables Tab

Overview

The Manual trigger allows you to launch a task immediately, while setting or overriding the value of one or more user-defined variables specified in the task.

Use a Manual trigger if you want to manually launch a task but cannot use the **Launch Task** or **Trigger Now** buttons because you have to set or override one or more variables. For example, you might choose to use a Manual trigger to launch a "generic" Workflow that you run occasionally with a slight variation in specific details. In this case, you will launch the Workflow and pass in the appropriate details using variables.

You can use the Manual trigger to set values to pre-existing variables or create new variables. The variable values you enter here override all others. However, the change in value only persists while this launched task instance(s) is running. Future executions of the task(s), unless they are launched by a Manual trigger, will use the standard methods for resolving user-defined variables.

The audit message created when you use a Manual trigger is the same as **Trigger Now**.

Creating a Manual Trigger and Triggering One or More Tasks

Step 1	From the Automation Center navigation pane, select **Triggers > Manual Triggers**. The Manual Triggers list displays. Below the list, Manual Trigger Details for a new Manual trigger displays.
Step 2	Enter/select Details for a new Manual 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 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 a **Save** button. The trigger is added to the database, and all buttons and tabs in the Trigger Details are enabled.
Step 4	Enable the trigger(s) as desired.
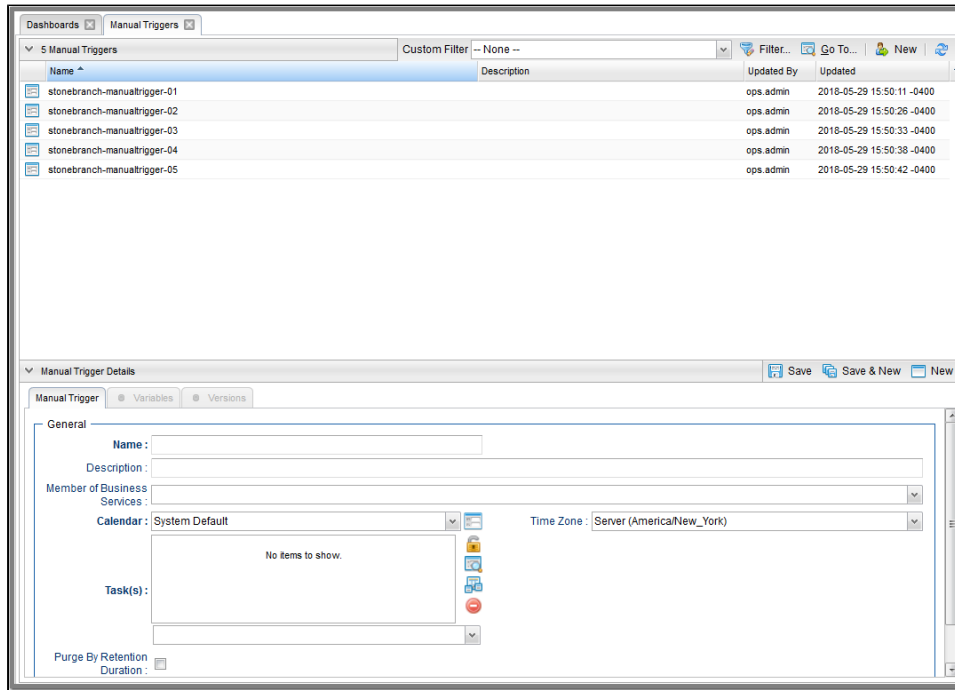
Note

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 Trigger Details

The following Manual Trigger Details is for an existing Manual trigger. See the field descriptions, below, for a description of the fields that display in the Manual Trigger Details.

Manual Trigger Details Field Descriptions

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

Field Name	Description
General	This section contains general information about the trigger.
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 255 alphanumerics. It is the responsibility of the user to develop a workable naming scheme 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 Versions tab to view previous versions. For details, see Record Versioning.
Description	User-defined; description of this trigger.
Member of Business Services	User-defined; allows you to select one or more Business Services that this record belongs to. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
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 Details 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 select tasks.
Purge By Retention Duration	Specification for whether triggered task instances can be purged by retention duration.
Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.
Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366.
Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: • Hours • Days
Execution User	Read-only; Execution user that has been selected (via the Assign Execution User action) to override the execution user of task instances being launched by the trigger.
Metadata	This section contains Metadata information about this record.

UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Trigger Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Trigger Now	Immediately triggers all the tasks specified in this trigger. Optionally, you also can select to: • Launch the task(s) specified in the trigger with one or more variables. • Launch the task(s) specified in the trigger by a specified date and time. • Launch the task(s) specified in the trigger but place them in Held status; they will not run until they are released. Note ⚠ If you click **Trigger Now...** for an Enabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of the Enabled By user. If you click **Trigger Now...** for a Disabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of your user name and ID. If you click **Trigger Now...** for an Enabled or Disabled trigger that has an assigned Execution User, the trigger will launch its task(s) under the context of the assigned Execution User.
Copy	Creates a copy of this trigger, which you are prompted to rename.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this trigger.
Tabs	This section identifies the tabs across the top of the Trigger Details that provide access to additional information about the trigger.

Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Entering Variables

Two methods are available for entering variables:

1. Use the **Trigger With Variables** Action menu item.
2. Use the **Variables** tab and **Trigger Now** button.

If you want to preserve information about the variables you are setting or overriding (the name and value), or if you want to specify default values, use the Variables tab. If you set up a Manual trigger with default values in the Variables tab, any values you set using the Trigger With Variables popup window override the values in the Variables tab. Each method is described below.

Using the Trigger with Variables Menu Option

Step 1	Select a trigger from the Manual Triggers list.
Step 2	Access the Action menu.
Step 2	Select **Trigger Now With Variables**. A **Trigger Now** pop-up window displays that lets you set or override the values of up to 10 variables that will be used in the execution of the task(s) named in the Manual trigger. These can be existing or new variables. Any existing variables are automatically populated in the window.
Step 3	Click **Submit** to launch the tasks named in the trigger. The variable information in the **Trigger Now** pop-up is passed into the task instance(s) where referenced and the contents of the pop-up are deleted.

Using the Variables Tab

Step 1	Click the Variables tab.
Step 2	Use the **New** button to add the variables you want to set.
Step 3	When you are finished, click the Manual Trigger tab and then click the **Trigger Now** button to launch the tasks named in the trigger.

Temporary Trigger

- Overview
- Creating a Temporary Trigger
    - Temporary Trigger Details
    - Temporary Trigger Details Field Descriptions

Overview

The Temporary trigger allows you to set up a one-time trigger for a task, based on a single date and time. You will use this trigger if you want to set up a task to run once at some time in the future.

Creating a Temporary Trigger

Step 1	From the Automation Center navigation pane, select **Triggers > Temporary Triggers**. The Temporary Triggers list displays. Below the list, Temporary Trigger Details for a new Temporary trigger displays.
Step 2	Enter/select Details for a new Temporary 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 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 a **Save** button. The trigger is added to the database, and all buttons and tabs in the Trigger Details are enabled.
Step 4	Enable the trigger(s) as desired.
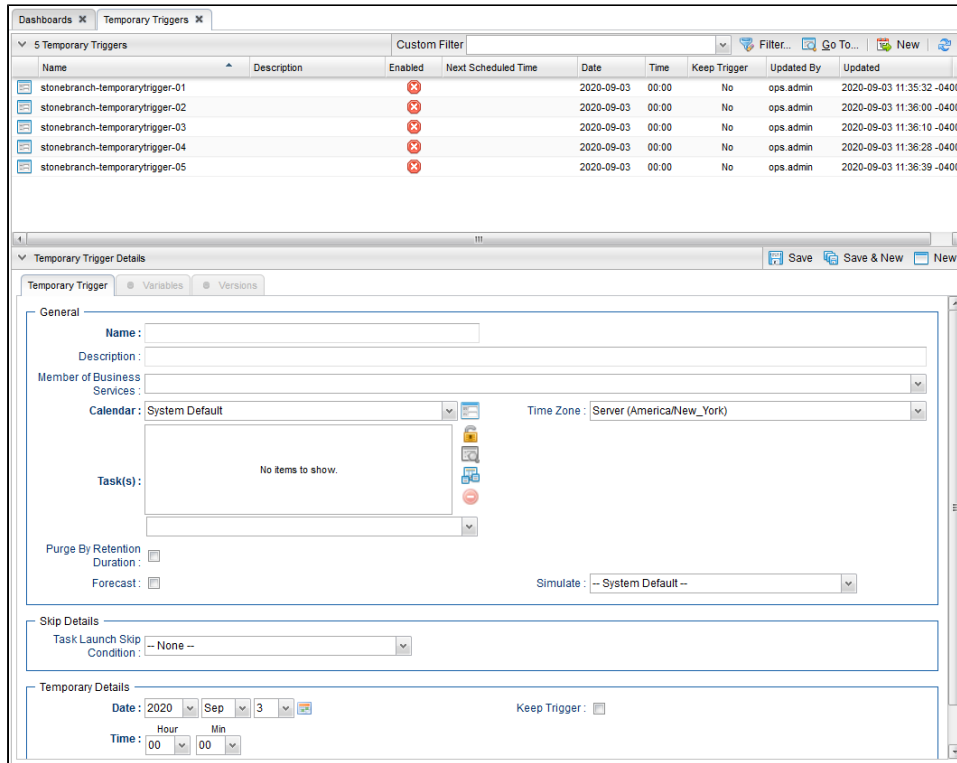
Note

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).

Temporary Trigger Details

The following Temporary Trigger Details is for an existing Temporary trigger. See the field descriptions, below, for a description of the fields that display in the Temporary Trigger Details.

Temporary Trigger Details Field Descriptions

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

Field Name	Description
General	This section contains general information about the trigger.
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 255 alphanumerics. It is the responsibility of the user to develop a workable naming scheme 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 Versions tab to view previous versions. For details, see Record Versioning.
Description	User-defined; description of this trigger.
Member of Business Services	User-defined; allows you to select one or more Business Services that this record belongs to. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
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 Details 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 select tasks.
Purge By Retention Duration	Specification for whether triggered task instances can be purged by retention duration.
Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.
Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366.

Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: • Hours • Days
Execution User	Read-only; Execution user that has been selected (via the Assign Execution User action) to override the execution user of task instances being launched by the trigger.
Forecast	If checked, the Controller calculates the date and time when this trigger will be satisfied for the next number of days, as specified in the Forecast Period In Days Universal Controller system property. The Controller writes the forecasting entries to the Forecasts List. Note ⚠ If this field is checked on a trigger and the trigger is promoted, it will not be checked for that trigger on the target system.
Simulate	Enables the override of the Enable Trigger Simulation Universal Controller system property specification for whether or not to simulate the launching of tasks when triggers are eligible to fire. (If simulation is enabled, only the scheduled launch of the task by the trigger is inhibited.) Options: • **-- System Default --** - Use the system default for enabling / disabling trigger simulation as specified by Enable Trigger Simulation. • **True** - Enable trigger simulation • **False** - Disable trigger simulation.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Next Scheduled Time	System-supplied; for time-based triggers. If Status = Enabled, the next date and time this trigger will be satisfied. See Displaying Trigger Forecast Information.
Enabled By	System-supplied. If Status = Enabled, ID of the user who most recently enabled this trigger.
Disabled By	System-supplied; If Status = Disabled, ID of the user who most recently disabled this trigger. (By default, all new triggers are disabled.)
Enabled Time	System-supplied. If Status = Enabled, Date and time that the trigger was enabled.
Disabled Time	System-supplied. If Status = Disabled, Date and time that the trigger was disabled.
Skip Details	This section contains detailed information about skipping the trigger.

Task Launch Skip Condition	User-defined; Controls when launching a task for the trigger will be skipped.
	
	Default is the value of the Trigger Task Launch Skip Condition Default Universal Controller system property.
	
	Options:
	
	• -- None --
	  Do not skip the task launch.
	• Active
	  Skip the task launch if a previous instance is still active.
	• Active By Trigger
	  Skip the task launch if a previous instance launched by the trigger is still active.
	
	Task Launch Skip Condition is not applicable when using the **Trigger Now...** command and will be ignored.

Temporary Details	This section contains assorted detailed information about the trigger.
Date	Date you want the trigger to be satisfied.
Time (hh.mm)	Required. Specifies the time of the trigger in hours and minutes. For example, 01:45 means trigger the task at 1:45 a.m.; 13:45 means trigger the task at 1:45 p.m.
Keep Trigger	If checked, indication that the Temporary Trigger should be Disabled, rather than Deleted, after the Next Scheduled Time.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Trigger Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Enable	Activates this trigger and writes your User ID to the Enabled By field.

Disable	Deactivates this trigger.
Trigger Now...	Immediately triggers all the tasks specified in this trigger. Optionally, you also can select to: • Launch the task(s) specified in the trigger with one or more variables. • Launch the task(s) specified in the trigger by a specified date and time. • Launch the task(s) specified in the trigger but place them in Held status; they will not run until they are released. Note ⚠ If you click **Trigger Now...** for an Enabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of the Enabled By user. If you click **Trigger Now...** for a Disabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of your user name and ID. If you click **Trigger Now...** for an Enabled or Disabled trigger that has an assigned Execution User, the trigger will launch its task(s) under the context of the assigned Execution User.
Copy	Creates a copy of this trigger, which you are prompted to rename.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this trigger.
Tabs	This section identifies the tabs across the top of the Trigger Details that provide access to additional information about the trigger.
Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Agent File Monitor Trigger

Overview

The Agent File Monitor trigger allows you to trigger one or more tasks based on the creation, deletion, or change of a file on a particular machine, as specified by a selected Agent File Monitor task, as illustrated below. For a detailed description, see Launching an Agent File Monitor Task Using an Agent File Monitor Trigger.
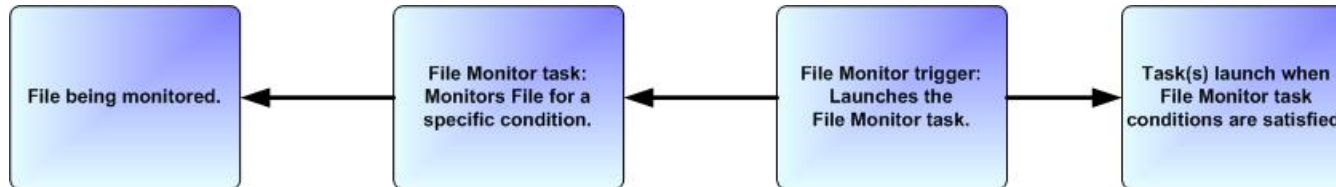
Note

⚠️ Using an Agent File Monitor trigger to trigger an Agent 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.

Built-In Variables

The built-in variables outlined below can be used to pass data where appropriate:

- Task and Task Instance Variables
- Agent File Monitor Variables

Prerequisites

Before you can use an Agent File Monitor Trigger, you need the following:

- A Windows, Linux/Unix, or z/OS agent, which will execute the Agent File Monitor task.
- An Agent File Monitor task, which watches for the creation, deletion, change, existence, or non-existence of a file.

Note

⚠️ Any changes made to an Agent File Monitor task are not recognized by its respective Agent File Monitor Triggers until those Triggers are disabled and re-enabled.

Creating an Agent File Monitor Trigger

Step 1	From the Automation Center navigation pane, select **Triggers > Agent File Monitor Triggers**. The Agent File Monitor Triggers list displays.
	Below the list, Agent File Monitor Trigger Details for a new Agent File Monitor trigger displays.
Step 2	Enter/select Details for a new Agent File 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 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 a **Save** button. The trigger is added to the database, and all buttons and tabs in the Trigger Details are enabled.
Step 4	Enable the trigger(s) as desired.

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).

Agent File Monitor Trigger Details

The following Agent File Monitor Trigger Details is for an existing Agent File Monitor trigger. See the field descriptions, below, for a description of the fields that display in the Agent File Monitor Trigger Details.

Agent File Monitor Trigger Details Field Descriptions

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

Field Name	Description

General	This section contains general information about the trigger.
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 255 alphanumerics. It is the responsibility of the user to develop a workable naming scheme 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 Versions tab to view previous versions. For details, see Record Versioning.
Description	User-defined; description of this trigger.
Member of Business Services	User-defined; allows you to select one or more Business Services that this record belongs to. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
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 Details 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 select tasks.
Purge By Retention Duration	Specification for whether triggered task instances can be purged by retention duration.
Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.
Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366.
Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: • Hours • Days

Execution User	Read-only; Execution user that has been selected (via the Assign Execution User action) to override the execution user of task instances being launched by the trigger.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Next Scheduled Time	System-supplied; for time-based triggers. If Status = Enabled, the next date and time this trigger will be satisfied. See Displaying Trigger Forecast Information.
Enabled By	System-supplied. If Status = Enabled, ID of the user who most recently enabled this trigger.
Disabled By	System-supplied; If Status = Disabled, ID of the user who most recently disabled this trigger. (By default, all new triggers are disabled.)
Enabled Time	System-supplied. If Status = Enabled, Date and time that the trigger was enabled.
Disabled Time	System-supplied. If Status = Disabled, Date and time that the trigger was disabled.
Skip Details	This section contains detailed information about skipping the trigger.

Task Launch Skip Condition	User-defined; Controls when launching a task for the trigger will be skipped.
	
	Default is the value of the Trigger Task Launch Skip Condition Default Universal Controller system property.
	
	Options:
	
	• -- None --
	  Do not skip the task launch.
	• Active
	  Skip the task launch if a previous instance is still active.
	• Active By Trigger
	  Skip the task launch if a previous instance launched by the trigger is still active.
	
	Task Launch Skip Condition is not applicable when using the **Trigger Now...** command and will be ignored.

Skip Restriction	User-defined; Specification for when this trigger should skip and not launch the task(s).
	Options:
	- **- - None - -** No skip restrictions - **Before** Trigger will skip if the current date and time is before the specified Skip Before Date and Skip Before Time values. - **After** Trigger will skip if the current date and time is after the specified Skip After Date and Skip After Time values. - **Span** Trigger will skip if the date and time qualifies based upon the specified Skip After Date, Skip After Time, Skip Before Date, and Skip After Date values.
	Note
	⚠️ If Skip After Date and Skip After Time are prior to the Skip Before Date and Skip Before Time, the Span is a "between" period. In this case, if the triggered time is after the Skip After Date and Skip After Time **as well as** before the Skip Before Date and Skip Before Time, the Trigger will skip and not launch the configured Task(s).
	If the Skip Before Date and Skip Before Time are prior to the Skip After Date and Skip After Time, the Span is a "not between" period. In this case, if the triggered time is **either** after the Skip After Date and Skip After Time **or** before the Skip Before Date and Skip Before Time, then the trigger will skip and not launch the configured Task(s).
	- **On** Trigger will skip on any of the dates specified in the Skip Date LIst.
	Default is - - None - -.
Skip Count	User-defined; Allows you to specify that the Controller should skip the next *N* times this task is triggered. Skip Count is not applicable when using the **Trigger Now...** command and will be ignored.
Skip Before Date	If Skip Restriction is Before or Span; Date before which the Trigger will skip.
Skip Before Time	If Skip Restriction is Before or Span; Time before which the Trigger will skip on the specified Skip Before Date.
Skip After Date	If Skip Restriction is After or Span; Date after which the Trigger will Skip.
Skip After Time	If Skip Restriction is After or Span; Time after which the Trigger will skip on the specified Skip After Date.
Skip Date List	If Skip Restriction is On; List of dates on which the trigger will skip.
Agent File Monitor Details	This section contains assorted detailed information about the trigger.

Agent File Monitor	Required; Agent File Monitor task being executed. Enter a task name, select a task from the drop-down list, or click the Task Details icon to create a new task. If a task already is specified in this field, click the Task Details icon to view the Details of that task.
Running Monitor	System-supplied; Name of the currently running task instance of the specified Agent File Monitor task that was launched by this enabled trigger.
Restrictions	This section specifies any restrictions that apply to the trigger.
Restrict Times	Period during which the trigger is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the trigger should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the trigger should be active. Use 24-hour time.
Special Restriction	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 Simple Restriction that disables the trigger if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the trigger on the last business day of every month.
Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday

Complex Restriction	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: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. 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.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.
Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.

Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N.
	If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Trigger Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Enable	Activates this trigger and writes your User ID to the Enabled By field.
Disable	Deactivates this trigger.

Trigger Now...	Immediately triggers all the tasks specified in this trigger. Optionally, you also can select to: • Launch the task(s) specified in the trigger with one or more variables. • Launch the task(s) specified in the trigger by a specified date and time. • Launch the task(s) specified in the trigger but place them in Held status; they will not run until they are released. Note ⚠️ If you click **Trigger Now...** for an Enabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of the Enabled By user. If you click **Trigger Now...** for a Disabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of your user name and ID. If you click **Trigger Now...** for an Enabled or Disabled trigger that has an assigned Execution User, the trigger will launch its task(s) under the context of the assigned Execution User.
Copy	Creates a copy of this trigger, which you are prompted to rename.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this trigger.
Tabs	This section identifies the tabs across the top of the Trigger Details that provide access to additional information about the trigger.
Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Task Monitor Trigger

- Overview
- Built-In Variables
- Prerequisites
- Creating a Task Monitor Trigger
    - Task Monitor Trigger Details
    - Task Monitor Trigger Details Field Descriptions

Overview

The Task Monitor Trigger allows you to trigger one or more tasks, as specified in a selected Task Monitor task, as illustrated below. For details, see Launching a Task Monitor Task Using a Task Monitor Trigger.
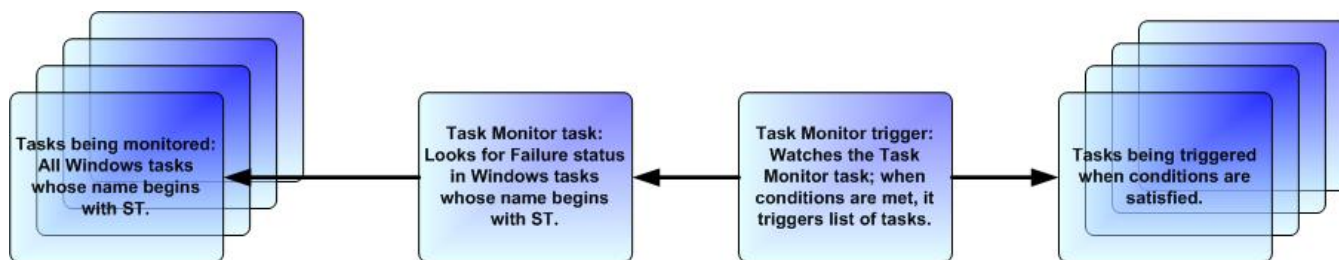
Built-In Variables

The built-in variables outlined below can be used to pass data where appropriate:

- Task Monitor Variables
- Trigger Variables

Prerequisites

Before you can use a Task Monitor Trigger, you need a Task Monitor task, which defines the statuses being monitored for and the tasks being monitored.

Note

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Any changes made to a Task Monitor task are not recognized by its respective Task Monitor Triggers until those Triggers are disabled and re-enabled.

Creating a Task Monitor Trigger

Step 1	From the Automation Center navigation pane, select **Triggers > Task Monitor Triggers**. The Task Monitor Triggers list displays. Below the list, Task Monitor Trigger Details for a new Task Monitor trigger displays.
Step 2	Enter/select Details for a new Task 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 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 a **Save** button. The trigger is added to the database, and all buttons and tabs in the Trigger Details are enabled.
Step 4	Enable the trigger(s) as desired.

Note

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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 Trigger Details

The following Task Monitor Trigger Details is for an existing Task trigger. See the field descriptions, below, for a description of the fields that display in the Task Monitor Trigger Details.

Task Monitor Trigger Details Field Descriptions

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

Field Name	Description
General	This section contains general information about the trigger.
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 255 alphanumerics. It is the responsibility of the user to develop a workable naming scheme 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 Versions tab to view previous versions. For details, see Record Versioning.
Description	User-defined; description of this trigger.
Member of Business Services	User-defined; allows you to select one or more Business Services that this record belongs to. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
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 Details 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 select tasks.
Purge By Retention Duration	Specification for whether triggered task instances can be purged by retention duration.
Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.
Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366.

Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: • Hours • Days
Execution User	Read-only; Execution user that has been selected (via the Assign Execution User action) to override the execution user of task instances being launched by the trigger.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Next Scheduled Time	System-supplied; for time-based triggers. If Status = Enabled, the next date and time this trigger will be satisfied. See Displaying Trigger Forecast Information.
Enabled By	System-supplied. If Status = Enabled, ID of the user who most recently enabled this trigger.
Disabled By	System-supplied; If Status = Disabled, ID of the user who most recently disabled this trigger. (By default, all new triggers are disabled.)
Enabled Time	System-supplied. If Status = Enabled, Date and time that the trigger was enabled.
Disabled Time	System-supplied. If Status = Disabled, Date and time that the trigger was disabled.
Skip Details	This section contains detailed information about skipping the trigger.

Task Launch Skip Condition	User-defined; Controls when launching a task for the trigger will be skipped.
	
	Default is the value of the Trigger Task Launch Skip Condition Default Universal Controller system property.
	
	Options:
	
	• -- None --
	  Do not skip the task launch.
	• Active
	  Skip the task launch if a previous instance is still active.
	• Active By Trigger
	  Skip the task launch if a previous instance launched by the trigger is still active.
	
	Task Launch Skip Condition is not applicable when using the **Trigger Now...** command and will be ignored.

Skip Restriction	User-defined; Specification for when this trigger should skip and not launch the task(s).
	
	Options:
	
	• - - None - -
	   No skip restrictions
	• Before
	   Trigger will skip if the current date and time is before the specified Skip Before Date and Skip Before Time values.
	• After
	   Trigger will skip if the current date and time is after the specified Skip After Date and Skip After Time values.
	• Span
	   Trigger will skip if the date and time qualifies based upon the specified Skip After Date, Skip After Time, Skip Before Date, and Skip After Date values.
	
	   Note
	
	   ⚠️ If Skip After Date and Skip After Time are prior to the Skip Before Date and Skip Before Time, the Span is a "between" period. In this case, if the triggered time is after the Skip After Date and Skip After Time **as well as** before the Skip Before Date and Skip Before Time, the Trigger will skip and not launch the configured Task(s).
	
	   If the Skip Before Date and Skip Before Time are prior to the Skip After Date and Skip After Time, the Span is a "not between" period. In this case, if the triggered time is **either** after the Skip After Date and Skip After Time **or** before the Skip Before Date and Skip Before Time, then the trigger will skip and not launch the configured Task(s).
	• On
	   Trigger will skip on any of the dates specified in the Skip Date LIst.
	
	Default is - - None - -.

Skip Count	User-defined; Allows you to specify that the Controller should skip the next *N* times this task is triggered. Skip Count is not applicable when using the **Trigger Now...** command and will be ignored.
Skip Before Date	If Skip Restriction is Before or Span; Date before which the Trigger will skip.
Skip Before Time	If Skip Restriction is Before or Span; Time before which the Trigger will skip on the specified Skip Before Date.
Skip After Date	If Skip Restriction is After or Span; Date after which the Trigger will Skip.
Skip After Time	If Skip Restriction is After or Span; Time after which the Trigger will skip on the specified Skip After Date.
Skip Date List	If Skip Restriction is On; List of dates on which the trigger will skip.
Task Monitor Details	This section contains assorted detailed information about the trigger.

Task Monitor	Required; Task Monitor task being executed. Enter a task name, select a task from the drop-down list, or click the Task Details icon to create a new task. If a task already is specified in this field, click the Task Details icon to view the Details of that task.
Running Monitor	System-supplied; Name of the currently running task instance of the specified Task Monitor task that was launched by this enabled trigger.
Restrictions	This section specifies any restrictions that apply to the trigger.
Restrict Times	Period during which the trigger is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the trigger should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the trigger should be active. Use 24-hour time.
Special Restriction	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 Simple Restriction that disables the trigger if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the trigger on the last business day of every month.
Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday
Complex Restriction	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: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. 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.

Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR).
	Options:
	• And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection.
	Options:
	• Every • 1st • 2nd • 3rd • 4th • Last • Nth
	Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select.
	Options:
	• Sunday through Saturday • Day • Business Day • Custom Day
	Example: The last **business day** of the month.
Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from.
	Options:
	• Month • Year • Week • January through December • Custom period
	Example: The last quarter of the **year**.
Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N.
	If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.

Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Trigger Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Enable	Activates this trigger and writes your User ID to the Enabled By field.
Disable	Deactivates this trigger.
Trigger Now...	Immediately triggers all the tasks specified in this trigger. Optionally, you also can select to: • Launch the task(s) specified in the trigger with one or more variables. • Launch the task(s) specified in the trigger by a specified date and time. • Launch the task(s) specified in the trigger but place them in Held status; they will not run until they are released. Note ⚠️ If you click **Trigger Now...** for an Enabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of the Enabled By user. If you click **Trigger Now...** for a Disabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of your user name and ID. If you click **Trigger Now...** for an Enabled or Disabled trigger that has an assigned Execution User, the trigger will launch its task(s) under the context of the assigned Execution User.
Copy	Creates a copy of this trigger, which you are prompted to rename.

Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this trigger.
Tabs	This section identifies the tabs across the top of the Trigger Details that provide access to additional information about the trigger.
Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Variable Monitor Trigger

Overview

The Variable Monitor trigger allows you to trigger one or more tasks based on the conditions specified by a selected Variable Monitor task.

Note

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You can select only a Variable Monitor task with a Value Monitor Type = **Change**.
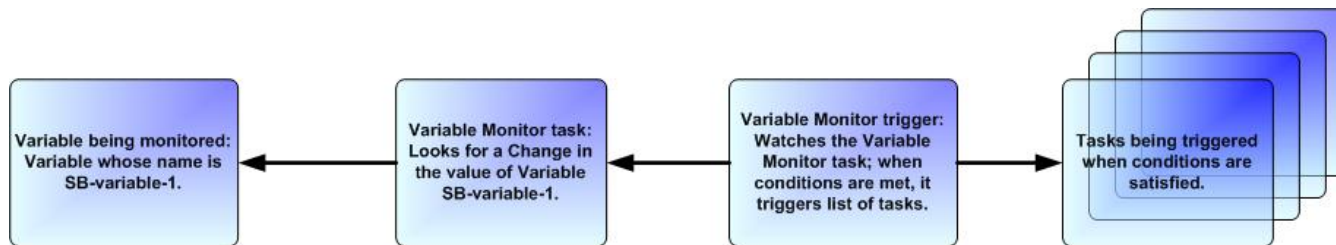
Built-In Variables

The built-in variables outlined below can be used to pass data where appropriate:

- Variable Monitor Task Instance/Trigger Variables
- Trigger Variables

Prerequisites

Before you can use a Variable Monitor Trigger, you need a Variable Monitor task, which defines the conditions for the variable being monitored.

Note

⚠️

Any changes made to a Variable Monitor task are not recognized by its respective Variable Monitor Triggers until those Triggers are disabled and re-enabled.

Creating a Variable Monitor Trigger

Step 1	From the Automation Center navigation pane, select **Triggers > Variable Monitor Triggers**. The Variable Monitor Triggers list displays. Below the list, Variable Monitor Trigger Details for a new Variable Monitor trigger displays.
Step 2	Enter/select Details for a new Variable 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 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 a **Save** button. The trigger is added to the database, and all buttons and tabs in the Trigger Details are enabled.
Step 4	Enable the trigger(s) as desired.

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 Trigger Details

The following Variable Monitor Trigger Details is for an existing Variable Monitor trigger. See the field descriptions, below, for a description of the fields that display in the Variable Monitor Trigger Details.

Variable Monitor Trigger Details Field Descriptions

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

Field Name	Description
General	This section contains general information about the trigger.
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 255 alphanumerics. It is the responsibility of the user to develop a workable naming scheme 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 Versions tab to view previous versions. For details, see Record Versioning.
Description	User-defined; description of this trigger.
Member of Business Services	User-defined; allows you to select one or more Business Services that this record belongs to. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
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 Details 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 select tasks.
Purge By Retention Duration	Specification for whether triggered task instances can be purged by retention duration.
Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.
Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366.

Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: • Hours • Days
Execution User	Read-only; Execution user that has been selected (via the Assign Execution User action) to override the execution user of task instances being launched by the trigger.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Next Scheduled Time	System-supplied; for time-based triggers. If Status = Enabled, the next date and time this trigger will be satisfied. See Displaying Trigger Forecast Information.
Enabled By	System-supplied. If Status = Enabled, ID of the user who most recently enabled this trigger.
Disabled By	System-supplied; If Status = Disabled, ID of the user who most recently disabled this trigger. (By default, all new triggers are disabled.)
Enabled Time	System-supplied. If Status = Enabled, Date and time that the trigger was enabled.
Disabled Time	System-supplied. If Status = Disabled, Date and time that the trigger was disabled.
Skip Details	This section contains detailed information about skipping the trigger.

Task Launch Skip Condition	User-defined; Controls when launching a task for the trigger will be skipped.
	
	Default is the value of the Trigger Task Launch Skip Condition Default Universal Controller system property.
	
	Options:
	
	• -- None --
	  Do not skip the task launch.
	• Active
	  Skip the task launch if a previous instance is still active.
	• Active By Trigger
	  Skip the task launch if a previous instance launched by the trigger is still active.
	
	Task Launch Skip Condition is not applicable when using the **Trigger Now...** command and will be ignored.

Skip Restriction	User-defined; Specification for when this trigger should skip and not launch the task(s). Options: • - - None - - 　No skip restrictions • Before 　Trigger will skip if the current date and time is before the specified Skip Before Date and Skip Before Time values. • After 　Trigger will skip if the current date and time is after the specified Skip After Date and Skip After Time values. • Span 　Trigger will skip if the date and time qualifies based upon the specified Skip After Date, Skip After Time, Skip Before Date, and Skip After Date values. 　Note 　⚠️ If Skip After Date and Skip After Time are prior to the Skip Before Date and Skip Before Time, the Span is a "between" period. In this case, if the triggered time is after the Skip After Date and Skip After Time **as well as** before the Skip Before Date and Skip Before Time, the Trigger will skip and not launch the configured Task(s). 　If the Skip Before Date and Skip Before Time are prior to the Skip After Date and Skip After Time, the Span is a "not between" period. In this case, if the triggered time is **either** after the Skip After Date and Skip After Time **or** before the Skip Before Date and Skip Before Time, then the trigger will skip and not launch the configured Task(s). • On 　Trigger will skip on any of the dates specified in the Skip Date LIst. Default is - - None - -.
Skip Count	User-defined; Allows you to specify that the Controller should skip the next *N* times this task is triggered. Skip Count is not applicable when using the **Trigger Now...** command and will be ignored.
Skip Before Date	If Skip Restriction is Before or Span; Date before which the Trigger will skip.
Skip Before Time	If Skip Restriction is Before or Span; Time before which the Trigger will skip on the specified Skip Before Date.
Skip After Date	If Skip Restriction is After or Span; Date after which the Trigger will Skip.
Skip After Time	If Skip Restriction is After or Span; Time after which the Trigger will skip on the specified Skip After Date.
Skip Date List	If Skip Restriction is On; List of dates on which the trigger will skip.
Variable Monitor Details	This section contains assorted detailed information about the trigger.

Variable Monitor	Required; Variable Monitor task being executed. Enter a task name, select a task from the drop-down list, or click the Task Details icon to create a new task. If a task already is specified in this field, click the Task Details icon to view (and change, as desired) the Details of that task. Note ⚠️ If you click the Details icon to create or update a Variable Monitor, Change is pre-selected for the Variable Monitor Type field and cannot be changed.
Running Monitor	System-supplied; Name of the currently running task instance of the specified Variable Monitor task that was launched by this enabled trigger.
Restrictions	This section specifies any restrictions that apply to the trigger.
Restrict Times	Period during which the trigger is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the trigger should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the trigger should be active. Use 24-hour time.
Special Restriction	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 Simple Restriction that disables the trigger if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the trigger on the last business day of every month.
Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday

Complex Restriction	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: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. 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.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.
Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.

Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N. If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Trigger Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Enable	Activates this trigger and writes your User ID to the Enabled By field.
Disable	Deactivates this trigger.

Trigger Now...	Immediately triggers all the tasks specified in this trigger. Optionally, you also can select to: • Launch the task(s) specified in the trigger with one or more variables. • Launch the task(s) specified in the trigger by a specified date and time. • Launch the task(s) specified in the trigger but place them in Held status; they will not run until they are released. Note ⚠ If you click **Trigger Now...** for an Enabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of the Enabled By user. If you click **Trigger Now...** for a Disabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of your user name and ID. If you click **Trigger Now...** for an Enabled or Disabled trigger that has an assigned Execution User, the trigger will launch its task(s) under the context of the assigned Execution User.
Copy	Creates a copy of this trigger, which you are prompted to rename.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this trigger.
Tabs	This section identifies the tabs across the top of the Trigger Details that provide access to additional information about the trigger.
Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Email Monitor Trigger

- Overview
- Built-In Variables
- Prerequisites
- Creating an Email Monitor Trigger
    - Email Monitor Trigger Details
    - Email Monitor Trigger Details Field Descriptions

Overview

The Email Monitor trigger allows you to trigger one or more tasks based on the status of a Mailbox Folder being monitored, as specified by a selected Email Monitor task.

Built-In Variables

The built-in variables outlined below can be used to pass data where appropriate:

- Task and Task Instance Variables
- Email Monitor Variables.

Prerequisites

Before you can use a Email Monitor Trigger, you need the following:

- A Windows, Linux/Unix, or z/OS agent, which will execute the Email Monitor task.
- An Email Monitor task, which specifies an Email Mailbox folder to monitor.

Note

⚠️ Any changes made to an Email Monitor task are not recognized by its respective Email Monitor Triggers until those Triggers are disabled and re-enabled.

Creating an Email Monitor Trigger

Step 1	From the Automation Center navigation pane, select **Triggers > File Monitor Triggers**. The Email Monitor Triggers list displays. Below the list, Email Monitor Trigger Details for a new Email Monitor trigger displays.
Step 2	Enter/select Details for a new Email 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 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 a **Save** button. The trigger is added to the database, and all buttons and tabs in the Trigger Details are enabled.
Step 4	Enable the trigger(s) as desired.

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 Monitor Trigger Details

The following Email Monitor Trigger Details is for an existing File Monitor trigger. See the field descriptions, below, for a description of the fields that display in the Email Monitor Trigger Details.

Email Monitor Trigger Details Field Descriptions

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

Field Name	Description

General	This section contains general information about the trigger.
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 255 alphanumerics. It is the responsibility of the user to develop a workable naming scheme 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 Versions tab to view previous versions. For details, see Record Versioning.
Description	User-defined; description of this trigger.
Member of Business Services	User-defined; allows you to select one or more Business Services that this record belongs to. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
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 Details 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 select tasks.
Purge By Retention Duration	Specification for whether triggered task instances can be purged by retention duration.
Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.
Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366.
Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: - Hours - Days

Execution User	Read-only; Execution user that has been selected (via the Assign Execution User action) to override the execution user of task instances being launched by the trigger.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Next Scheduled Time	System-supplied; for time-based triggers. If Status = Enabled, the next date and time this trigger will be satisfied. See Displaying Trigger Forecast Information.
Enabled By	System-supplied. If Status = Enabled, ID of the user who most recently enabled this trigger.
Disabled By	System-supplied; If Status = Disabled, ID of the user who most recently disabled this trigger. (By default, all new triggers are disabled.)
Enabled Time	System-supplied. If Status = Enabled, Date and time that the trigger was enabled.
Disabled Time	System-supplied. If Status = Disabled, Date and time that the trigger was disabled.
Skip Details	This section contains detailed information about skipping the trigger.
Task Launch Skip Condition	User-defined; Controls when launching a task for the trigger will be skipped. Default is the value of the Trigger Task Launch Skip Condition Default Universal Controller system property. Options: -- None -- Do not skip the task launch. - Active Skip the task launch if a previous instance is still active. - Active By Trigger Skip the task launch if a previous instance launched by the trigger is still active. Task Launch Skip Condition is not applicable when using the **Trigger Now...** command and will be ignored.

Skip Restriction	User-defined; Specification for when this trigger should skip and not launch the task(s).
	Options:
	- - - None - - No skip restrictions • Before Trigger will skip if the current date and time is before the specified Skip Before Date and Skip Before Time values. • After Trigger will skip if the current date and time is after the specified Skip After Date and Skip After Time values. • Span Trigger will skip if the date and time qualifies based upon the specified Skip After Date, Skip After Time, Skip Before Date, and Skip After Date values.
	Note ⚠️ If Skip After Date and Skip After Time are prior to the Skip Before Date and Skip Before Time, the Span is a "between" period. In this case, if the triggered time is after the Skip After Date and Skip After Time **as well as** before the Skip Before Date and Skip Before Time, the Trigger will skip and not launch the configured Task(s). If the Skip Before Date and Skip Before Time are prior to the Skip After Date and Skip After Time, the Span is a "not between" period. In this case, if the triggered time is **either** after the Skip After Date and Skip After Time **or** before the Skip Before Date and Skip Before Time, then the trigger will skip and not launch the configured Task(s).
	• On Trigger will skip on any of the dates specified in the Skip Date LIst.
	Default is - - None - -.
Skip Count	User-defined; Allows you to specify that the Controller should skip the next *N* times this task is triggered. Skip Count is not applicable when using the **Trigger Now...** command and will be ignored.
Skip Before Date	If Skip Restriction is Before or Span; Date before which the Trigger will skip.
Skip Before Time	If Skip Restriction is Before or Span; Time before which the Trigger will skip on the specified Skip Before Date.
Skip After Date	If Skip Restriction is After or Span; Date after which the Trigger will Skip.
Skip After Time	If Skip Restriction is After or Span; Time after which the Trigger will skip on the specified Skip After Date.
Skip Date List	If Skip Restriction is On; List of dates on which the trigger will skip.
Email Monitor Details	This section contains assorted detailed information about the trigger.

Email Monitor	Required; Email Monitor task being executed. Enter a task name, select a task from the drop-down list, or click the Task Details icon to create a new task. If a task already is specified in this field, click the Task Details icon to view the Details of that task.
Running Monitor	System-supplied; Name of the currently running task instance of the specified Email Monitor task that was launched by this enabled trigger.
Restrictions	This section specifies any restrictions that apply to the trigger.
Restrict Times	Period during which the trigger is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the trigger should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the trigger should be active. Use 24-hour time.
Special Restriction	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 Simple Restriction that disables the trigger if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the trigger on the last business day of every month.
Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday

Complex Restriction	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: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. 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.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.
Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.

Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N. If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Trigger Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Enable	Activates this trigger and writes your User ID to the Enabled By field.
Disable	Deactivates this trigger.

| Trigger Now... | Immediately triggers all the tasks specified in this trigger.

Optionally, you also can select to:

- Launch the task(s) specified in the trigger with one or more variables.
- Launch the task(s) specified in the trigger by a specified date and time.
- Launch the task(s) specified in the trigger but place them in Held status; they will not run until they are released.

Note

⚠

If you click **Trigger Now...** for an Enabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of the Enabled By user.

If you click **Trigger Now...** for a Disabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of your user name and ID.

If you click **Trigger Now...** for an Enabled or Disabled trigger that has an assigned Execution User, the trigger will launch its task(s) under the context of the assigned Execution User. |
|---|---|
| List Qualifying Times | Lets you generate a list of future dates and times that the trigger will trigger the specified task (see Generating a List of Qualifying Times, below). |
| Copy | Creates a copy of this trigger, which you are prompted to rename. |
| Delete | Deletes the current record. |
| Refresh | Refreshes any dynamic data displayed in the Details. |
| Close | For pop-up view only; closes the pop-up view of this trigger. |
| Tabs | This section identifies the tabs across the top of the Trigger Details that provide access to additional information about the trigger. |
| Variables | Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record. |
| Versions | Stores copies of all previous versions of the current record. See Record Versioning. |

Composite Trigger

Overview

The Composite trigger consists of Time, Agent File Monitor, Task Monitor, Variable Monitor, and Email Monitor components - which function like Time, Agent File Monitor, Task Monitor, Variable Monitor, and Email Monitor triggers - that allow you to trigger one or more tasks based on correlated events from those components.

Each Composite trigger can contain the following number of components:

- Time Component (0 or 1)
- Agent File Monitor Component (0 or more)
- Task Monitor Component (0 or more)
- Variable Monitor Component (0 or more)
- Email Monitor Component (0 or more)

When you enable a Composite trigger, all components of that trigger are enabled. Each enabled component has its own event queue. When a component fires, an event is enqueued and the component notifies its parent Composite trigger. The Composite trigger will then check the event queues of all of its components and launch the specified task(s) if a correlated set of events is found.

The Composite Trigger Details provides the following fields for component queue specifications:

- Time Limit and Time Limit Details specify the length of time that events are maintained in all component queues.
- Queue Depth specifies the maximum number of events that can be contained in each component queue. If the maximum has been reached but more events are ready to be placed in a queue, the oldest events are discarded.

Built-In Variables

In order to propagate built-in variables up to a Composite trigger, from the files, tasks, and variables being monitored by its File Monitor, Task Monitor, Variable Monitor, and Email Monitor components, the Component Details provide a **Variable Prefix** field.

- If a **Variable Prefix** is not specified, no built-in variables for that component will be propagated.
- If a **Variable Prefix** is specified, all built-in variables supported by the component type will be propagated using the specified prefix rather than the reserved **ops_** prefix.

Additionally, all components - File Monitor, Task Monitor, Variable Monitor, Email Monitor, and Time - support the built-in variable `<prefix>trigger_component_event_time` that resolves to the time when the component fired.

Monitoring Component Status

You can monitor the following statuses of each enabled component in its component Details (available via the Components tab of the Composite trigger).

Component	Status
Time	- Status - Next Scheduled Time
File Monitor	- Status - Running Monitor - Monitor Status
Task Monitor	- Status - Running Monitor - Monitor Status
Variable Monitor	- Status - Running Monitor - Monitor Status
Email Monitor	- Status - Running Monitor - Monitor Status

Forecasting

Forecasting is not supported for Composite triggers.

Creating a Composite Trigger

Step 1	From the Automation Center navigation pane, select **Triggers > Composite Triggers**. The Composite Triggers list displays. Below the list, Composite Trigger Details for a new Composite trigger displays.
Step 2	Enter/select Details for a new Composite 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 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 a **Save** button. The trigger is added to the database, and all buttons and tabs in the Trigger Details are enabled.
Step 4	Enable the trigger(s) as desired.
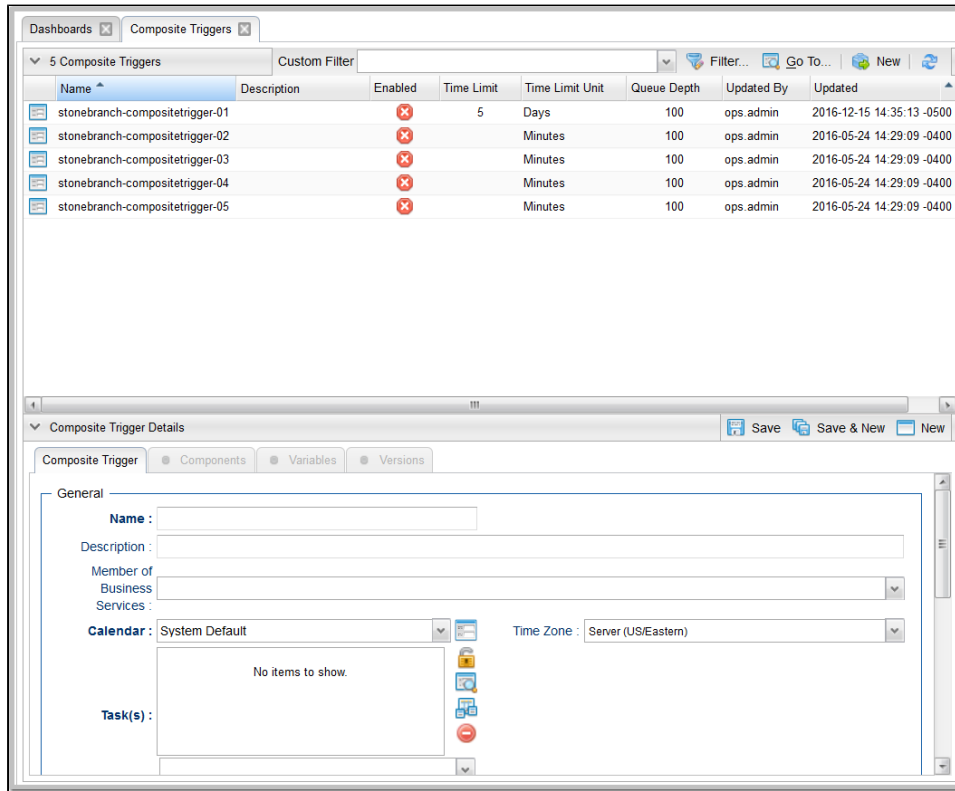
Note

⚠️

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).

Composite Trigger Details

The following Composite Trigger Details is for an existing Composite trigger. See the field descriptions, below, for a description of the fields that display in the Composite Trigger Details.

Composite Trigger Details Field Descriptions

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

Field Name	Description
General	This section contains general information about the trigger.
Name	Name used within the Controller to identify this trigger. It can contain a maximum of 255 alphanumerics. It is the responsibility of the user to develop a workable naming scheme 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 Versions tab to view previous versions. For details, see Record Versioning.
Description	User-defined; description of this trigger.
Member of Business Services	User-defined; allows you to select one or more Business Services that this record belongs to. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
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 Details 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 select tasks.
Purge By Retention Duration	Specification for whether triggered task instances can be purged by retention duration.
Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.
Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366.

Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: • Hours • Days
Execution User	Read-only; Execution user that has been selected (via the Assign Execution User action) to override the execution user of task instances being launched by the trigger.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Next Scheduled Time	System-supplied; for time-based triggers. If Status = Enabled, the next date and time this trigger will be satisfied. See Displaying Trigger Forecast Information.
Enabled By	System-supplied. If Status = Enabled, ID of the user who most recently enabled this trigger.
Disabled By	System-supplied; If Status = Disabled, ID of the user who most recently disabled this trigger. (By default, all new triggers are disabled.)
Enabled Time	System-supplied. If Status = Enabled, Date and time that the trigger was enabled.
Disabled Time	System-supplied. If Status = Disabled, Date and time that the trigger was disabled.
Skip Details	This section contains detailed information about skipping the trigger.

Task Launch Skip Condition	User-defined; Controls when launching a task for the trigger will be skipped.
	
	Default is the value of the Trigger Task Launch Skip Condition Default Universal Controller system property.
	
	Options:
	
	• -- None --
	  Do not skip the task launch.
	• Active
	  Skip the task launch if a previous instance is still active.
	• Active By Trigger
	  Skip the task launch if a previous instance launched by the trigger is still active.
	
	Task Launch Skip Condition is not applicable when using the **Trigger Now...** command and will be ignored.

Skip Restriction	User-defined; Specification for when this trigger should skip and not launch the task(s).
	
	Options:
	
	• - - None - -
	  No skip restrictions
	• Before
	  Trigger will skip if the current date and time is before the specified Skip Before Date and Skip Before Time values.
	• After
	  Trigger will skip if the current date and time is after the specified Skip After Date and Skip After Time values.
	• Span
	  Trigger will skip if the date and time qualifies based upon the specified Skip After Date, Skip After Time, Skip Before Date, and Skip After Date values.
	
	   Note
	
	   ⚠ If Skip After Date and Skip After Time are prior to the Skip Before Date and Skip Before Time, the Span is a "between" period. In this case, if the triggered time is after the Skip After Date and Skip After Time **as well as** before the Skip Before Date and Skip Before Time, the Trigger will skip and not launch the configured Task(s).
	
	   If the Skip Before Date and Skip Before Time are prior to the Skip After Date and Skip After Time, the Span is a "not between" period. In this case, if the triggered time is **either** after the Skip After Date and Skip After Time **or** before the Skip Before Date and Skip Before Time, then the trigger will skip and not launch the configured Task(s).
	• On
	  Trigger will skip on any of the dates specified in the Skip Date LIst.
	
	Default is - - None - -.

Skip Count	User-defined; Allows you to specify that the Controller should skip the next *N* times this task is triggered. Skip Count is not applicable when using the **Trigger Now...** command and will be ignored.
Skip Before Date	If Skip Restriction is Before or Span; Date before which the Trigger will skip.
Skip Before Time	If Skip Restriction is Before or Span; Time before which the Trigger will skip on the specified Skip Before Date.
Skip After Date	If Skip Restriction is After or Span; Date after which the Trigger will Skip.
Skip After Time	If Skip Restriction is After or Span; Time after which the Trigger will skip on the specified Skip After Date.
Skip Date List	If Skip Restriction is On; List of dates on which the trigger will skip.
Composite Details	This section contains assorted detailed information about the trigger.
Time Limit	Amount of time (in Time Limit Units) that component events will remain in their queue before being removed.

Time Limit Units	Unit of time specified in the Time Limit field. Options: • Seconds • Minutes • Hours • Days
Queue Depth	Number of events that are maintained in the queue for each component at any time. To maintain the Queue Depth, the Controller discards the oldest events. Valid values are 1 to 100 (default is 100). If Queue Depth = 1, only the most recent event from each component can be matched.
Restrictions	This section specifies any restrictions that apply to the trigger.
Restrict Times	Period during which the trigger is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the trigger should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the trigger should be active. Use 24-hour time.
Special Restriction	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 Simple Restriction that disables the trigger if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the trigger on the last business day of every month.
Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday

Complex Restriction	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: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. 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.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.
Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.

Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N. If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Trigger Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Enable	Activates this trigger and writes your User ID to the Enabled By field.
Disable	Deactivates this trigger.

Trigger Now...	Immediately triggers all the tasks specified in this trigger.

Optionally, you also can select to:

- Launch the task(s) specified in the trigger with one or more variables.
- Launch the task(s) specified in the trigger by a specified date and time.
- Launch the task(s) specified in the trigger but place them in Held status; they will not run until they are released.

Note

⚠️

If you click **Trigger Now...** for an Enabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of the Enabled By user.

If you click **Trigger Now...** for a Disabled trigger that does not have an assigned Execution User, the trigger will launch its task(s) under the context of your user name and ID.

If you click **Trigger Now...** for an Enabled or Disabled trigger that has an assigned Execution User, the trigger will launch its task(s) under the context of the assigned Execution User. |
| **List Component Events** | For enabled triggers; Displays a new tab that lists all components of the Composite trigger and maintains a dynamic count of all events that have occurred for each component.

 |
Copy	Creates a copy of this trigger, which you are prompted to rename.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this trigger.
Tabs	This section identifies the tabs across the top of the Trigger Details that provide access to additional information about the trigger.

Components	Allows you to define the following components: • Single Time Trigger component • One or more Task Monitor trigger components • One or more File Monitor trigger components • One or more Variable Monitor trigger components • One or more Email Monitor trigger components
Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Time Component

Time Component Details Field Descriptions

The following table describes the fields and buttons that display in the Time Component Details.

Field Name	Description
General	This section contains general information about the component.
Name	Name used within the Controller to identify this component. It can contain a maximum of 255 alphanumerics.
Description	User-defined; Description of this component.
Built-In Variable Prefix	User-specified prefix that enables built-in variables to be propagated up to the Composite trigger.
Status	This section contains information about the current status of the component.
Event Match Type	Controls whether events from the Time component will be used for a single match or multiple matches at the Composite trigger level. Options: • Single • Multiple Note ⚠ You can select Multiple only if a Time Limit is specified in the Composite Trigger Details.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Next Scheduled Time	System-supplied; for time-based triggers. If Status = Enabled, the next date and time this trigger will be satisfied. See Displaying Trigger Forecast Information.
Time Details	This section contains assorted detailed information about the component.

Time Style	Specifies whether this trigger is for a specific time or a series of times.
	
	Options:
	
	• Time - Triggers the task at a specific time.
	  • Required field: Time.
	• Time Interval - Triggers the task at specific intervals of times.
	  • Required fields: Time Interval, Time Interval Units.
	  • Optional fields: Enable Offset, Restrict Times.

Time	Required if Time Style = Time; time of the trigger in hours and minutes, using 24-hour time. For example, 01:45 means trigger the task at 1:45 a.m.; 13:45 means trigger the task at 1:45 p.m. (See also Daylight Saving Time.)

Time Interval	Required if Time Style = Time Interval; number of Time Interval Units. For example, for a Time Interval of every three hours, specify 3 in this field and select **Hours** in the Time Interval Units field. Note ⚠️ See Scheduling a Time Interval, below, for information on using a Time Trigger to schedule a time interval for triggering a task. Also see Time Trigger Minimum Frequency In Seconds Universal Controller system property to the define the minimum time interval that must be used.
Time Interval Units	Required if Time Style = Time Interval; Type of time interval. Used in conjunction with the Time Interval field. For example, for a Time Interval of every three hours, specify 3 in the Time Interval field and select **Hours** in this field. Options: • Seconds • Minutes • Hours
Enable Offset	If Time Style = Time Interval, allows you to define (in the Initial Time Offset field) a starting time, in minutes offset from the hour, for the trigger to run.
Initial Time Offset (hh:mm)	If Enable Offset is selected, allows you to define a starting time, in minutes offset from the hour. The default value (*) lets you select a starting hour (0 to 23) other than the next hour. For example: • If you want the task to run every 30 minutes at the :15 and :45 minute mark, you would select Time Interval = 30, Time Interval Units = minutes, and Initial Time Offset = *:15. • If you want the task to run every 30 minutes at the :15 and :45 minute mark starting at 6:15 p.m., you would select Time Interval = 30, Time Interval Units = minutes, and Initial Time Offset = 18:15.
Day Details	This section contains assorted detailed information about the trigger day.

Day Style	Allows you to indicate when this trigger will be run:
	
	Options:
	
	• Simple
	  Trigger is run every day, on business days, or on one or more specific days, depending on what you select in the Daily, Business Days, and Specific Day(s) fields (see below).
	• Complex
	  Trigger is run on one or more days selected by a formula specified using the Date Adjective, Date Noun, and Date Qualifier fields (see below).
	• Every
	  Trigger is run at an interval of a specified number of days (see Day Interval, below) starting on a specified date (see Interval Start, below).

Daily	If Day Style = Simple, allows you to specify that the trigger is active every day of the week.
Business Days	If Day Style = Simple, allows you to specify that the trigger is active on the business days specified in the calendar selected in the Calendar field.

Specific Day(s)	If Day Style = Simple, allows you to specify one or more specific days of the week that the trigger is active in the calendar selected in the Calendar field.
Date Adjective	If Day Style = Complex, allows you to specify which in a series of days you want to select. Used in conjunction with the Date Noun and the Date Qualifier fields. For example, to specify "the 15th business day of the month," select Date Adjective = Nth, Date Noun = Business Day, Date Qualifier = Month, and Nth Amount = 15. Options: • Every • 1st • 2nd • 3rd • 4th • Nth • Last
Nth Amount	If Day Adjective = Nth, allows you to specify the value of N.
Date Noun	If Day Style = Complex, allows you to specify the type of day you want to select. Used in conjunction with the Date Adjective and the Date Qualifier fields. For example, to specify "the 15th business day of the month," select Date Adjective = Nth, Date Noun = Business Day, Date Qualifier = Month, and Nth Amount = 15. This drop-down menu is populated as follows: • Sunday through Saturday • Day = any day • Business Day = The business days specified in the calendar selected in the Calendar field. • Any Custom Days specified in the calendar selected in the Calendar field.
Date Qualifier	If Day Style = Complex, allows you to specify the period for your selection formula. Used in conjunction with the Date Noun and Date Adjective fields. For example, to specify "the 15th business day of the month," select Date Adjective = Nth, Date Noun = Business Day, Date Qualifier = Month, and Nth Amount = 15. Options: • Month • Year • Week • January through December • Custom Period (see Creating Custom Days)

Date Adjustment	If Day Style = Complex, allows you to adjust your date setting by a less or plus number of Days or Business Days. For example, to specify the 2nd to last day of the month (last day of the month less one day), select Date Adjective = Last, Date Noun = Day, Date Qualifier = Month, Data Adjustment = Less, Adjustment Amount = 1, and Adjustment Type = Day. Options: • None • Less • Plus Default is None.
Adjustment Amount	Required if Day Adjustment = Less or Plus; Allows you to specify the number of Days or Business Days to adjust your date setting. Maximum is 366. Default is 1.
Adjustment Type	If Day Adjustment = Less or Plus, allows you to specify the type of day by which to adjust your date setting. Options: • Day • Business Day
Day Interval	If Day Style = Every, allows you to specify the interval (in days) at which this trigger will run.
Interval Start	If Day Style = Every, allows you to specify the first day of the interval on which this trigger will run.
Restrictions	This section specifies any restrictions that apply to the component.
Restrict Times	If Time Style = Time Interval; Period during which the trigger is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields. Restrict Times does not affect the start time or end time of the trigger Time Interval; it only specifies the time frame during which the trigger is active. (For additional information, see Restrict Times on the Time Trigger page.) Note ⚠️ Restrict Times and Enable Offset are mutually exclusive.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the trigger should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the trigger should be active. Use 24-hour time.

Adjust Interval To Enabled Start	If Restrict Times is enabled; Specification for whether to always begin at the Enabled Start, regardless of the time interval, or to begin based on the actual interval. If Adjust Interval To Enabled Start is not selected, the start time and end time specify only the time frame/window during which the trigger is active; they do not modify the actual time interval (see Restrict Times).
Special Restriction	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 Simple Restriction that disables the trigger if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the trigger on the last business day of every month.
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday
Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)
Complex Restriction	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: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. 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.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or

Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.
Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.
Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N. If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.

Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Component Details that let you perform various actions.
Save	Saves a new record in the Controller database.
Save & View	Saves a new record in the Controller database and continues to display that record.
Update	Saves updates to the record.
List Qualifying Times	Lets you generate a list of future dates and times that the trigger will trigger the specified task (see Generating a List of Qualifying Times, below).
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this component.

Generating a List of Qualifying Times

The Controller allows you to generate a list of future dates and times that a trigger will trigger the specified task.

Step 1	Click the List Qualifying Times button in the Time Trigger Details. The List Qualifying Times Input dialog displays.
Step 2	Select a Number of Dates/Times (1 - 1000) that you want to list. The default is 30.
Step 3	Select a Start Date from when you want the list to begin.
Step 4	Click the **Submit** button to generate the list. For example:

Qualifying Times ▫ ▫ ☒

stonebranch-timetrigger-01

📅 Listing From: 2020-06-01 14:05:57 -0400 🖨

User/Trigger Timezone: America/New_York

Mon, Jun 01, 2020 17:05:57 EDT -0400
Mon, Jun 01, 2020 20:05:57 EDT -0400
Mon, Jun 01, 2020 23:05:57 EDT -0400
Tue, Jun 02, 2020 02:05:57 EDT -0400
Tue, Jun 02, 2020 05:05:57 EDT -0400
Tue, Jun 02, 2020 08:05:57 EDT -0400
Tue, Jun 02, 2020 11:05:57 EDT -0400
Tue, Jun 02, 2020 14:05:57 EDT -0400
Tue, Jun 02, 2020 17:05:57 EDT -0400
Tue, Jun 02, 2020 20:05:57 EDT -0400
Tue, Jun 02, 2020 23:05:57 EDT -0400
Wed, Jun 03, 2020 02:05:57 EDT -0400
Wed, Jun 03, 2020 05:05:57 EDT -0400
Wed, Jun 03, 2020 08:05:57 EDT -0400
Wed, Jun 03, 2020 11:05:57 EDT -0400
Wed, Jun 03, 2020 14:05:57 EDT -0400
Wed, Jun 03, 2020 17:05:57 EDT -0400
Wed, Jun 03, 2020 20:05:57 EDT -0400
Wed, Jun 03, 2020 23:05:57 EDT -0400
Thu, Jun 04, 2020 02:05:57 EDT -0400
Thu, Jun 04, 2020 05:05:57 EDT -0400
Thu, Jun 04, 2020 08:05:57 EDT -0400
Thu, Jun 04, 2020 11:05:57 EDT -0400

```
Thu, Jun 04, 2020 11:05:57 EDT -0400
Thu, Jun 04, 2020 14:05:57 EDT -0400
Thu, Jun 04, 2020 17:05:57 EDT -0400
Thu, Jun 04, 2020 20:05:57 EDT -0400
Thu, Jun 04, 2020 23:05:57 EDT -0400
Mon, Jun 08, 2020 02:05:57 EDT -0400
Mon, Jun 08, 2020 05:05:57 EDT -0400
Mon, Jun 08, 2020 08:05:57 EDT -0400
```
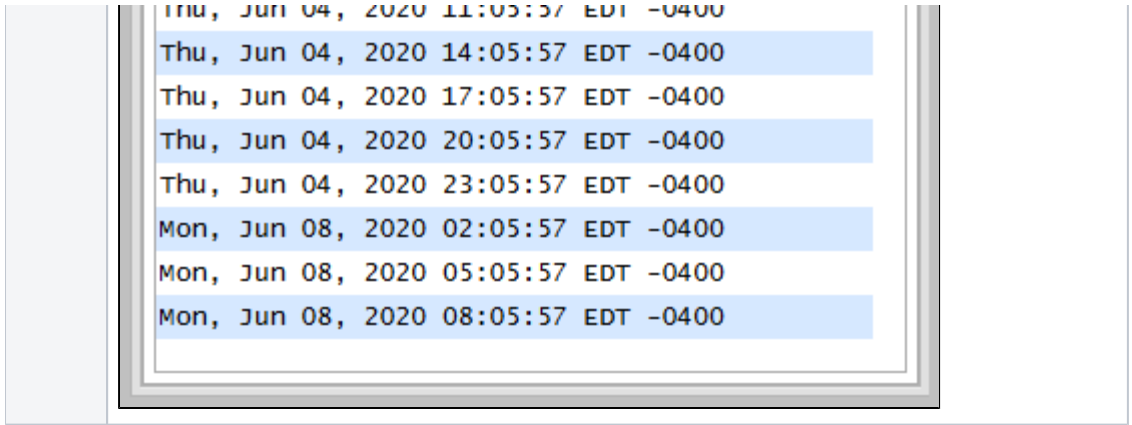
Agent File Monitor Component

Agent File Monitor Component Details Field Descriptions

The following table describes the fields and buttons that display in the Agent File Monitor Component Details.

Field Name	Description
General	This section contains general information about the component.
Name	Name used within the Controller to identify this component. It can contain a maximum of 255 alphanumerics.

Description	User-defined; Description of this component.
Built-In Variable Prefix	User-specified prefix that enables built-in variables in the file(s) being monitored to be propagated up to the Composite trigger.
Status	This section contains information about the current status of the component.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Monitor Status	System-supplied; Lists the status of File Monitor tasks currently running that were launched by this trigger.
File Monitor Details	This section contains assorted detailed information about the component.
File Monitor	Unable to render {include} The included page could not be found.
Running Monitor	Unable to render {include} The included page could not be found.
Restrictions	This section specifies any restrictions that apply to the component.
Restrict Times	Period during which the component is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the component should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the component should be active. Use 24-hour time.
Special Restriction	Enable this field in order to specify additional parameters that tell the Controller how to handle exceptions, such as when the component is satisfied on a holiday or non-business day. You can specify simple and/or complex restrictions. For example, you can specify a Simple Restriction that disables the component if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the component on the last business day of every month.
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday

Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)
Complex Restriction	If enabled, allows you to specify a set of parameters that determine one or more situations when this component should not be satisfied. Used in conjunction with the following fields: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. For example, you may specify that you do not want to satisfy this component on the last business day of the year or the first day of each month.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.

Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.
Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N. If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Component Details that let you perform various actions.
Save	Saves a new record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this component.

Task Monitor Component

Task Monitor Component Details Field Descriptions

The following table describes the fields and buttons that display in the Task Monitor Component Details.

Field Name	Description
General	This section contains general information about the component.
Name	Name used within the Controller to identify this component. It can contain a maximum of 255 alphanumerics.

Description	User-defined; Description of this component.
Built-In Variable Prefix	User-specified prefix that enables built-in variables in the task(s) being monitored to be propagated up to the Composite trigger.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Monitor Status	System-supplied; Lists the status of Task Monitor tasks currently running that were launched by this trigger.
Task Monitor Details	This section contains assorted detailed information about the component.
Task Monitor	Required; Task Monitor task being executed. Enter a task name, select a task from the drop-down list, or click the Task Details icon to create a new task. If a task already is specified in this field, click the Task Details icon to view the Details of that task.
Running Monitor	System-supplied; Name of the currently running task instance of the specified Task Monitor task that was launched by this enabled trigger.
Restrictions	This section specifies any restrictions that apply to the component.
Restrict Times	Period during which the component is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the component should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the component should be active. Use 24-hour time.
Special Restriction	Enable this field in order to specify additional parameters that tell the Controller how to handle exceptions, such as when the component is satisfied on a holiday or non-business day. You can specify simple and/or complex restrictions. For example, you can specify a Simple Restriction that disables the component if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the component on the last business day of every month.
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday

Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)
Complex Restriction	If enabled, allows you to specify a set of parameters that determine one or more situations when this component should not be satisfied. Used in conjunction with the following fields: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. For example, you may specify that you do not want to satisfy this component on the last business day of the year or the first day of each month.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.

Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.
Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N. If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Component Details that let you perform various actions.
Save	Saves a new record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this component.

Variable Monitor Component

Variable Monitor Component Details Field Descriptions

The following table describes the fields and buttons that display in the Variable Monitor Component Details.

Field Name	Description
General	This section contains general information about the component.
Name	Name used within the Controller to identify this component. It can contain a maximum of 255 alphanumerics.

Description	User-defined; Description of this component.
Built-In Variable Prefix	User-specified prefix that enables built-in variables in the task(s) being monitored to be propagated up to the Composite trigger.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.
Monitor Status	System-supplied; Lists the status of Variable Monitor tasks currently running that were launched by this trigger.
Variable Monitor Details	This section contains assorted detailed information about the component.
Variable Monitor	Required; Variable Monitor task being executed. Enter a task name, select a task from the drop-down list, or click the Task Details icon to create a new task. If a task already is specified in this field, click the Task Details icon to view the Details of that task. Note ⚠️ If you click the Details icon to create or update a Variable Monitor, Change is pre-selected for the Variable Monitor Type field and cannot be changed.
Running Monitor	System-supplied; Name of the currently running task instance of the specified Variable Monitor task that was launched by this enabled trigger.
Restrictions	This section specifies any restrictions that apply to the component.
Restrict Times	Period during which the component is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the component should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the component should be active. Use 24-hour time.
Special Restriction	Enable this field in order to specify additional parameters that tell the Controller how to handle exceptions, such as when the component is satisfied on a holiday or non-business day. You can specify simple and/or complex restrictions. For example, you can specify a Simple Restriction that disables the component if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the component on the last business day of every month.
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday

Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)
Complex Restriction	If enabled, allows you to specify a set of parameters that determine one or more situations when this component should not be satisfied. Used in conjunction with the following fields: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. For example, you may specify that you do not want to satisfy this component on the last business day of the year or the first day of each month.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.

Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.
Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N. If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Component Details that let you perform various actions.
Save	Saves a new record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this component.

Email Monitor Component

Email Monitor Component Details Field Descriptions

The following table describes the fields and buttons that display in the Email Monitor Component Details.

Field Name	Description
General	This section contains general information about the component.
Name	Name used within the Controller to identify this component. It can contain a maximum of 255 alphanumerics.
Description	User-defined; Description of this component.
Built-In Variable Prefix	User-specified prefix that enables built-in variables in the task(s) being monitored to be propagated up to the Composite trigger.
Status	This section contains information about the current status of the trigger.
Status	System-defined; Specification for whether the trigger is Enabled or Disabled. The user enables and disables the trigger by clicking the Enable / Disable buttons. Only enabled triggers are processed by the Controller.

Monitor Status	System-supplied; Lists the status of Email Monitor tasks currently running that were launched by this trigger.
Email Monitor Details	This section contains assorted detailed information about the component.
Email Monitor	Required; Email Monitor task being executed. Enter a task name, select a task from the drop-down list, or click the Task Details icon to create a new task. If a task already is specified in this field, click the Task Details icon to view the Details of that task. Note ⚠ If you click the Details icon to create or update an Email Monitor, Change is pre-selected for the Email Monitor Type field and cannot be changed.
Running Monitor	System-supplied; Name of the currently running task instance of the specified Email Monitor task that was launched by this enabled trigger.
Restrictions	This section specifies any restrictions that apply to the component.
Restrict Times	Period during which the component is active. Enable this field and specify the start and end times in the Enabled Start and Enabled End fields.
Enabled Start	If Restrict Times is enabled, allows you to specify the start time of the period during which the component should be active. Use 24-hour time.
Enabled End	If Restrict Times is enabled, allows you to specify the end time of the period during which the component should be active. Use 24-hour time.
Special Restriction	Enable this field in order to specify additional parameters that tell the Controller how to handle exceptions, such as when the component is satisfied on a holiday or non-business day. You can specify simple and/or complex restrictions. For example, you can specify a Simple Restriction that disables the component if it is satisfied on a holiday identified in the calendar and/or a Complex Restriction that disables the component on the last business day of every month.
Simple Restriction	If enabled, allows you to specify an action (see Action field) such as Do Not Trigger on a non-business day or holiday (see Situation field). For example, do not trigger on a non-business day.
Situation	If Simple Restriction is enabled, allows you to select the situation that causes the system to initiate the action specified in the Action field. Options: • On Non Business Day • On Holiday
Action	If Special Restriction is enabled, allows you to select an action to take on a non-business day or holiday (see Situation field). Options: • Do Not Trigger • Next Day (run on the next day) • Next Business Day (run on the next business day, as defined in the calendar) • Previous Day (run on the previous day) • Previous Business Day (run on the previous business day, as defined in the calendar)

Complex Restriction	If enabled, allows you to specify a set of parameters that determine one or more situations when this component should not be satisfied. Used in conjunction with the following fields: Restriction Mode, Restriction Adjective, Restriction Noun, Restriction Qualifier. For example, you may specify that you do not want to satisfy this component on the last business day of the year or the first day of each month.
Restriction Mode	If both Simple Restriction and Complex Restriction are enabled, specifies whether you want to use both restriction types (AND) or one or the other (OR). Options: • And • Or
Restriction Adjective	If Complex Restriction is enabled, the type of selection. Options: • Every • 1st • 2nd • 3rd • 4th • Last • Nth Example: The **last** business day of the month.
Restriction Noun	If Complex Restriction is enabled, the day you want to select. Options: • Sunday through Saturday • Day • Business Day • Custom Day Example: The last **business day** of the month.
Restriction Qualifier	If Complex Restriction is enabled, the period you are selecting from. Options: • Month • Year • Week • January through December • Custom period Example: The last quarter of the **year**.

Restriction Nth Amount	If Restriction Adjective is Nth, allows you to specify the value of N. If Restriction Qualifier is Week, Restriction Nth Amount must be <= 7.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Component Details that let you perform various actions.
Save	Saves a new record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this component.

Enabling and Disabling Triggers

- Introduction
- Enabling/Disabling a Single Trigger
- Enabling/Disabling Multiple Triggers
- Enabling/Disabling One or More Triggers from the Command Line

Introduction

When you define and submit a new trigger, you must enable it in order for Universal Controller to begin processing it. The Controller only processes triggers that are flagged as Enabled (Enabled triggers are Active triggers).

For tracking and compliance purposes, you must manually enable and disable triggers either by using:

- **Enable Trigger** and **Disable Trigger** buttons or Action menu items in Trigger Details.
- Enable a Trigger (ops-trigger-enable) and Disable a Trigger (ops-trigger-disable) CLI commands.

This process saves an audit record detailing the event. The trigger record also displays the ID of the user who enabled it.

Note

This does not apply to Manual triggers.

Enabling/Disabling a Single Trigger

Step 1	Display either the Triggers list for the trigger or the Trigger Details.
Step 2	Either: - Right-click the trigger in the Triggers list to display an Action menu and then click **Enable** or **Disable**. - Click the **Enable** or **Disable** button in the Trigger Details. In the Trigger Details: - The **Status** field in the **Status** section will change from Enabled to Disabled / Disabled to Enabled. - The **Enabled By** or **Disabled By** field in the **Status** section identifies the user that enabled / disabled the trigger. - The **Enabled Time** or **Disabled Time** in the **Status** section identifies when the trigger was enabled / disabled.

Enabling/Disabling Multiple Triggers

Step 1	Display a Triggers list or the Active Triggers list.
Step 2	Ctrl-click each trigger on the list that you want to enable/disable.
Step 3	Right-click any of the selected triggers to display an Action menu.

Step 4	Click **Enable** or **Disable**:
	- The **Status** field in the **Status** section of the Trigger Details for all selected triggers will change from Enabled to Disabled / Disabled to Enabled. - The **Enabled By** or **Disabled By** field in the **Status** section of the Trigger Details for all selected triggers identifies the user that enabled / disabled the triggers. - The **Enabled Time** or **Disabled Time** field in the **Status** section of the Trigger Details for all selected triggers identifies when the triggers were enabled / disabled.

Enabling/Disabling One or More Triggers from the Command Line

See the Enable a Trigger (ops-trigger-enable) and Disable a Trigger (ops-trigger-disable) CLI commands for instructions.

Assigning and Unassigning Trigger Execution Users

Overview

The Execution User of a task instance determines the security context under which the task instance runs.

How the task (from which the task instance was derived) is launched or triggered determines the Execution User:

- If a task is launched manually, via the Launch command, the Execution User of the task instance is the user who issued the Launch command.

- If a task is triggered manually, by issuing the Trigger Now... command:
    - For an Enabled trigger that does not have an assigned Execution User, the trigger will launch the task under the context of the user that enabled the trigger (the **Enabled By** user).
    - For a Disabled trigger that does not have an assigned Execution User, the trigger will launch the task under the context of the user that issued the Trigger Now... command.
    - For an Enabled or Disabled trigger that has an assigned Execution User, the trigger will launch the task under the context of the assigned Execution User.

- If a task is triggered when an Enabled trigger fires at its **Next Scheduled Time**, the trigger will launch the task under the context of the user that enabled the trigger (the **Enabled By** user), or, if the Execution User is assigned on the trigger - via the Assign Execution User... command - the trigger will launch the task under the context of the trigger's Execution User.

Note

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If a user is referenced by an Enabled trigger in the Enabled By field of the trigger, you can delete that user if the trigger is assigned a different Execution User.

If you attempt to unassign an Execution User from an Enabled trigger, and the Enabled By field of the trigger references an invalid user (see above), the command will fail with the following error:

Enabled By user "<user-name>" is no longer a valid username; you must disable the trigger prior to unassigning the execution user.

Determining Minimum Permissions for Assigned Execution User

When a trigger is assigned an Execution User, that Execution User becomes the user (or security context) under which all task instances launched by the Trigger run.

There are a number of Universal Controller definitions that require run-time security constraint validation, as shown in the following table. Understanding which of these definitions your task instances have a dependency on will help in determining the minimum permissions required for the Execution User; without these permissions, the task instances will transition into a Start Failure.

For tasks launched by a trigger, or tasks contained in a Workflow launched by a trigger, the following requirements apply:

Tasks running on an Agent	Execution User requires Execute permission for that Agent.

Tasks requiring a Credential	Execution User requires Execute permission for that Credential. (References to Credentials can exist for both non agent-based and agent-based task types. Furthermore, agents can specify default Credentials, even if the Credentials are not directly defined on the task.)
Tasks running a Script	Execution User requires Execute permission for that Script.
Tasks needing to read a Global Variable	Execution User requires Read permission for that Global Variable.
Tasks requiring a Virtual Resource	Execution User requires Execute permission for that Virtual Resource.

Assigning an Execution User to One or More Triggers

To assign an Execution User to a trigger, you must have the **Assign Execution User** Trigger permission.

Additionally, users that do not have the ops_admin role must provide Execution User login credentials (User ID and Password) in order to assign the Execution User to the trigger.

You can assign an execution user to:

- Single trigger
- Multiple triggers

Assigning an Execution User to a Single Trigger

Step 1	Open the trigger.

Step 2	Right-click the trigger Details and, in the Action menu that displays, click Assign Execution User.... An Assign Execution User dialog displays.
	Users with ops_admin Role
	Users without ops_admin Role
Step 3	Enter the user ID of the user that you want to assign as the Execution User for the task instances to be launched by this trigger. If you do not have the ops_admin Role, also enter the Password of the user.
Step 4	Click **Submit**. The **Execution User** field displays in the General Information section of the trigger Details, identifying the user you selected in the Assign Execution User dialog.

Assigning an Execution User to Multiple Triggers

Step 1	Display the triggers list from which you want to assign an execution user to multiple triggers.
Step 2	Ctrl+click the triggers that you want to assign an execution user.

Step 3	Right-click any of the selected triggers and, in the Action menu that displays, click Assign Execution User.... An Assign Execution User dialog displays.
	Users with ops_admin Role
	Assign Execution User...
	Execution User :
	Submit Cancel
	Users without ops_admin Role
	Assign Execution User...
	Execution User :
	Password :
	Submit Cancel
Step 4	Enter the user ID of the user that you want to assign as the Execution User for the task instances to be launched by these triggers. If you do not have the ops_admin Role, also enter the Password of the user.
Step 5	Click **Submit**. The **Execution User** field displays in the General Information section of each trigger Details, identifying the user you selected in the Assign Execution User dialog.

Unassigning an Execution User

To unassign an Execution User from a trigger, you must have the **Assign Execution User**Trigger permission.

Step 1	Open the trigger. The **Execution User** field should display in the General Information section of the trigger Details, identifying the currently defined Execution User for this trigger.
Step 2	Right-click the trigger Details and, in the Action menu that displays, click Unassign Execution User.... The Execution User identified in the Execution User field is unassigned as the Execution User for this trigger, and the Execution User field is removed from the trigger Details.

Copying Triggers

- Overview
- Copying One or More Triggers from a Triggers List
- Copying a Trigger from the Trigger Details
- Copy Permissions

Overview

You can make copies of all Universal Controller records, including triggers, using the standard method for Copying a Record: selecting **Insert** on the Action menu.

However, this method does not make copies of any records that are associated with the copies record. For triggers, **Insert** does not make copies of any Variables that are associated with the trigger.

The Copy Trigger option allows you to make a complete copy of a trigger, including all of its Variables.

Copying One or More Triggers from a Triggers List

Step 1	From the Automation Center navigation pane, select a trigger under **Triggers**. The Triggers list for that trigger type displays.
Step 2	Locate the trigger(s) you want to copy (see Filtering).

Step 3	Copy the trigger(s): **Copy One Trigger** 1. Right-click the **Trigger Name**. 2. On the Action menu, select **Copy**. A Copy Trigger pop-up dialog displays. ![Copy Cron Trigger dialog] 3. Enter a new name for the trigger and, optionally, select any Business Services that you want the trigger assigned to. 4. Click **Submit** to create a copy of the trigger. **Copy Multiple Triggers** 1. Ctrl-Click the triggers you want to copy. 2. Right-click any of the selected triggers . 3. On the Action menu, select **Copy**. 4. On the Confirmation pop-up that displays, click **OK**. The copied triggers are added to the list, with **- Copy** added as a suffix to the Trigger Name for each trigger. If a trigger with that **- Copy** name already exists, another copy is not created.
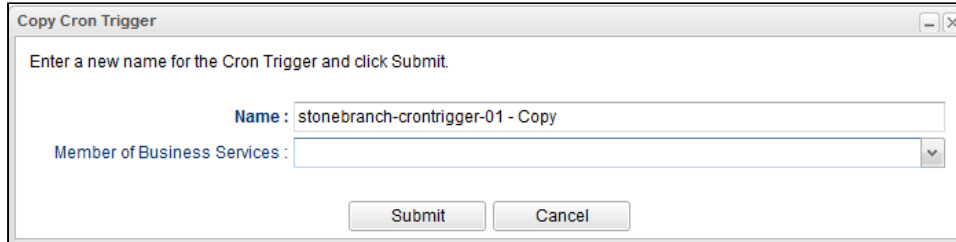
Copying a Trigger from the Trigger Details

Step 1	Select a task from a Triggers list. The Trigger Details for that trigger displays.
Step 2	Either: • Click the **Copy** button. • Right-click the Details to display the Action menu, and then click **Copy**. ![Copy Cron Trigger dialog]
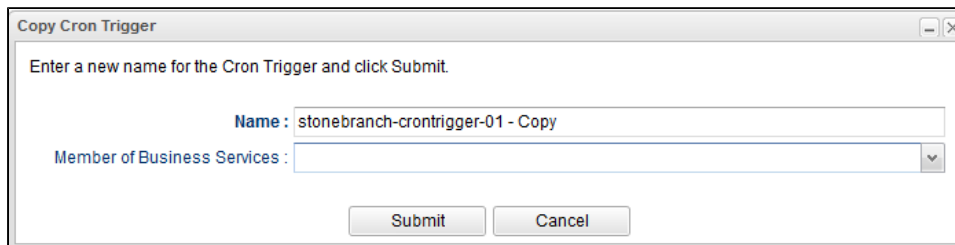
Step 3	Enter a new name for the trigger and, optionally, select any Business Services that you want the trigger assigned to.
Step 4	Click **Submit** to create a copy of the trigger.

Copy Permissions

To copy a Trigger, you must have both Read permission and Copy command permission for the Trigger you are copying, in addition to having Create permission for the copied Trigger.

Triggering with Variables

- Overview
- Using the Trigger Now... Pop-up Method
- Using the Variables Tab Method

Overview

Universal Controller provides two methods for manually launching all of the tasks associated with a trigger while supplying values for variables used by the task(s):

- Use the Trigger Now... pop-up method if you do not want the values that you enter for variables to persist. The values will apply only for the time the task(s) is running.
- Use the Variables tab method if you want to preserve the information (name and value) about the variables you are setting.
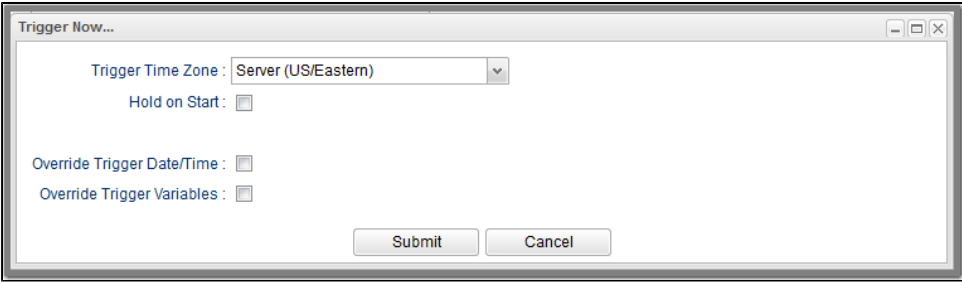
Both methods are available for all trigger types. You can use either method to manually launch task(s) when you cannot use the **Launch Task** button (in the task Details) because you want to override one or more variables.

The values that you enter when using either method override the all other values, set elsewhere, for those variables.

Variables set with the **Trigger Now...** pop-up method override any variables specified with the **Variables tab** method, but only for that run of the task(s).

The audit message created when you use either method is the same.

Using the Trigger Now... Pop-up Method

Step 1	From the Automation Center navigation pane, select **Triggers ><trigger type>**. The Triggers list for that trigger type displays.
Step 2	Right-click the trigger whose tasks you want to launch to display an Action menu.
Step 3	Click **Trigger Now...**. The Trigger Now... pop-up dialog displays.
Step 4	The **Trigger Time Zone** field displays, by default, the time zone of the trigger, but you can change it to any time zone in the drop-down list for this particular execution of the trigger to run in.
Step 5	If you want to put the task instances in held status when the tasks specified in the trigger are started, select **Hold on Start**. A **Hold Reason** field then displays which allows you to enter information about why the task instances will be put on hold when the tasks start.

Step 6	Select **Override Trigger Variables** to display a Variable window in the Trigger Now... pop-up dialog. Any variables already attached to the trigger (via the Variables tab method) display in alphabetic order (a-z).
	Note
	⚠️
	Additionally, you also can select **Override Trigger Date/Time** if you want to launch the tasks specified in the trigger by a specific date and time (see Triggering by Date and Time).
Step 7	To add a variable to the list, click the **+** icon and enter a **Name** and **Value** for the variable.
	To remove a variable from the list, click it and then click the **-** icon.
Step 8	Click **Submit** to launch the tasks named in the trigger. The variable information in the list is used where referenced in the tasks. After launching the tasks, the Controller deletes the contents of the list.
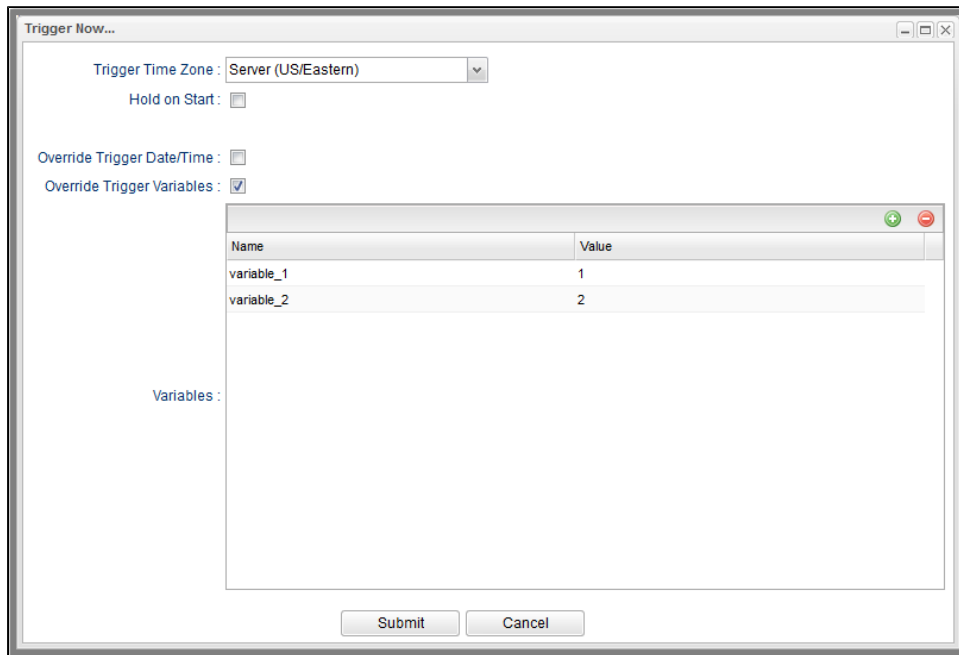
Using the Variables Tab Method

Step 1	From the Automation Center navigation pane, select **Triggers ><trigger type>**. The Triggers list for that trigger type displays.
Step 2	Open the trigger whose tasks you want to launch. The Trigger Details for that trigger displays.

Step 3	Click the **Variables** tab. The Trigger Variables list displays.
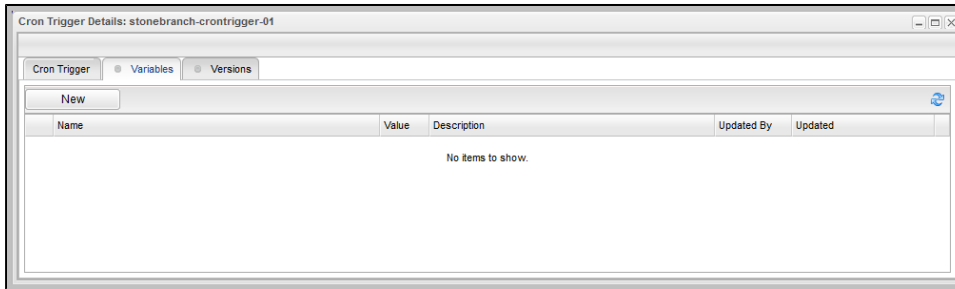
| Step 4 | To add a variable:

1. Click **New**. A Variables Details pop-up displays. |
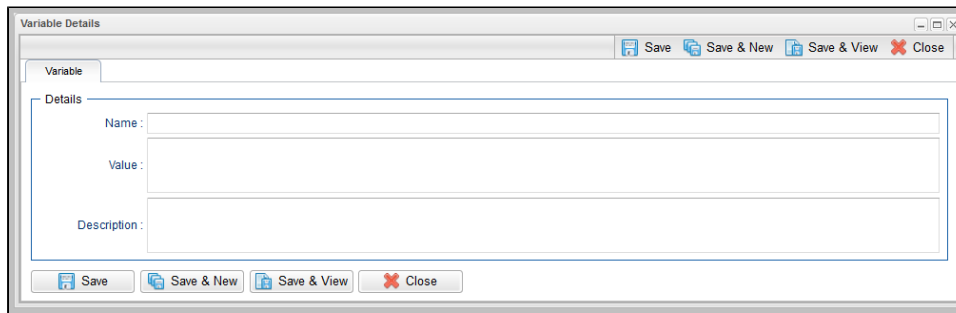
	2. Enter a Name, Value, and Description for the variable, and then click **Save**.

| Step 5 | To update a variable:

1. Click the icon next to a variable **Name** on the Trigger Variables list to displays the Variables Details pop-up .
2. Change the Name, Values, and/or Description of the variable, and then click **Update**. |

Step 6	Click the **<trigger type> Trigger** tab.

| Step 7 | Click the **Trigger Now** button to launch the tasks named in the trigger. |
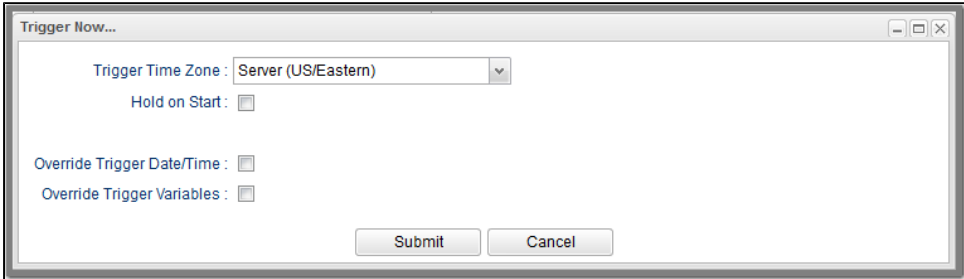
Triggering by Date and Time

- Overview
- Trigger by Date/Time

Overview

Universal Controller provides for the triggering of tasks at the present time or another specific date and time.

Trigger by Date/Time

Step 1	From the Automation Center navigation pane, select **Triggers ><trigger type>**. The Triggers list for that trigger type displays.
Step 2	Right-click the trigger whose tasks you want to launch to display an Action menu.
Step 3	Click **Trigger Now...**. The Trigger Now... pop-up dialog displays. Trigger Now... Trigger Time Zone : Server (US/Eastern) Hold on Start : Override Trigger Date/Time : Override Trigger Variables : Submit Cancel
Step 4	The **Trigger Time Zone** field displays, by default, the time zone of the trigger, but you can change it to any time zone in the drop-down list for this particular execution of the trigger to run in.
Step 5	If you want to put the task instances in held status when the tasks specified in the trigger are started, select **Hold on Start**.

Step 6	Select **Override Trigger Date/Times** to display fields in the Trigger Now... pop-up dialog that allow you to select a Date, Time, and Time Zone for this execution of the trigger.
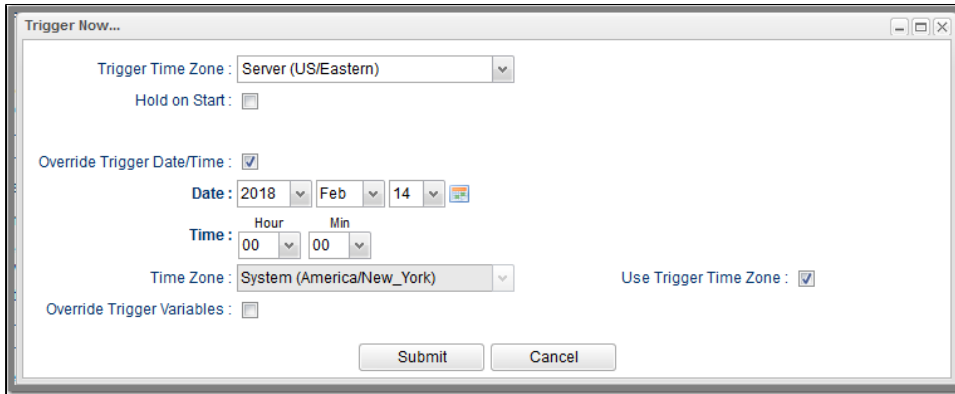
Step 7	If the **Trigger Time Zone** field displays in the pop-up, the **Time Zone** field, by default, is read-only and displays the time zone in the **Trigger Time Zone** field, since the **Use Trigger Time Zone** field is checked.
	If you want the trigger to run in a different time zone for the selected **Date** and **Time**, un-check the **Use Trigger Time Zone** field and select a time zone from the **Time Zone** drop-down list.
	The **Trigger Time Zone** and **Time Zone** fields allow the trigger to run as if in one time zone, and also allow the Date and Time of the trigger to be based upon another time zone. For example, you could execute Trigger Now... to run at a specific date and time with respect to the **Time Zone**, and yet the trigger itself will run based upon the **Trigger Time Zone**.
	If the task is a Workflow, **Trigger Time Zone** lets you select a time zone for this specific launch of the Workflow so that it runs, and evaluates both Run Criteria and Execution Restrictions, according to that time zone.
Step 8	You also can select **Override Trigger Variables** if you want to launch the tasks specified in the trigger while supplying values for variables used by the tasks (see Triggering with Variables).
Step 9	Click **Submit** to launch the tasks named in the trigger. The variable information in the list is used where referenced in the tasks. After launching the tasks, the Controller deletes the contents of the list.

Displaying Trigger Forecast Information

Overview

Four methods are available for displaying forecasting information on time-based triggers (Time, Cron, and Temporary) and the tasks they launch:

- Forecast Calendar displays a calendar showing tasks scheduled to run based on Time, Cron, and Temporary triggers. Where data is available, the estimated end time for each task also is calculated and displayed.
- Forecasts List displays a sequential list of the tasks shown in the Forecast Calendar.
- Next Scheduled Time field in Time, Cron, and Temporary trigger Details identifies the next time a trigger will launch its task(s).
- List Qualifying Times button in Time and Cron triggers Details displays a list of the next 30 qualifying dates and times.

Each of these methods is described below.

Forecast Calendar

For enabled Time, Temporary, and Cron triggers where forecasting has been specified, Universal Controller writes an entry to the Forecast Calendar (and the Forecasts List) for each time that a trigger task is scheduled to run within the next *N* days, where *N* is the forecast period specified in the Forecast Period in Days Universal Controller system property.

To display the Forecast Calendar, from the Automation Center navigation pane select **Triggers > Forecast Calendar**.

To display Details about an entry in the Forecast Calendar, click the entry. A Forecast Details pop-up displays. (You also can display Forecast Details by clicking an entry in the Forecasts List.)

To refresh the forecast data (for the displayed month only), click the Refresh icon.

Forecasts List

The Forecasts list displays information about every entry in the Forecast Calendar, plus information on tasks within a Workflow launched by a trigger.

To display the Forecasts List, from the Automation Center navigation pane select **Triggers > Forecasts**.

To display the Details about a Forecast in the list, either:

- Click the Details icon next to the **Trigger** Name to display a Forecast Details pop-up.
- Click the Forecast entry in the list to display the Forecast Details below the list.

(You also can display Forecast Details by clicking an entry in the Forecast Calendar.)

Forecast Details

Forecast Details displays information about the task, workflow, agent, and trigger associated with a trigger Forecast.

(For a workflow, only details about tasks and triggers are available.)

You can displays Forecast Details either by:

- Clicking an entry in the Forecasts Calendar.
- Clicking an entry in the Forecasts List.
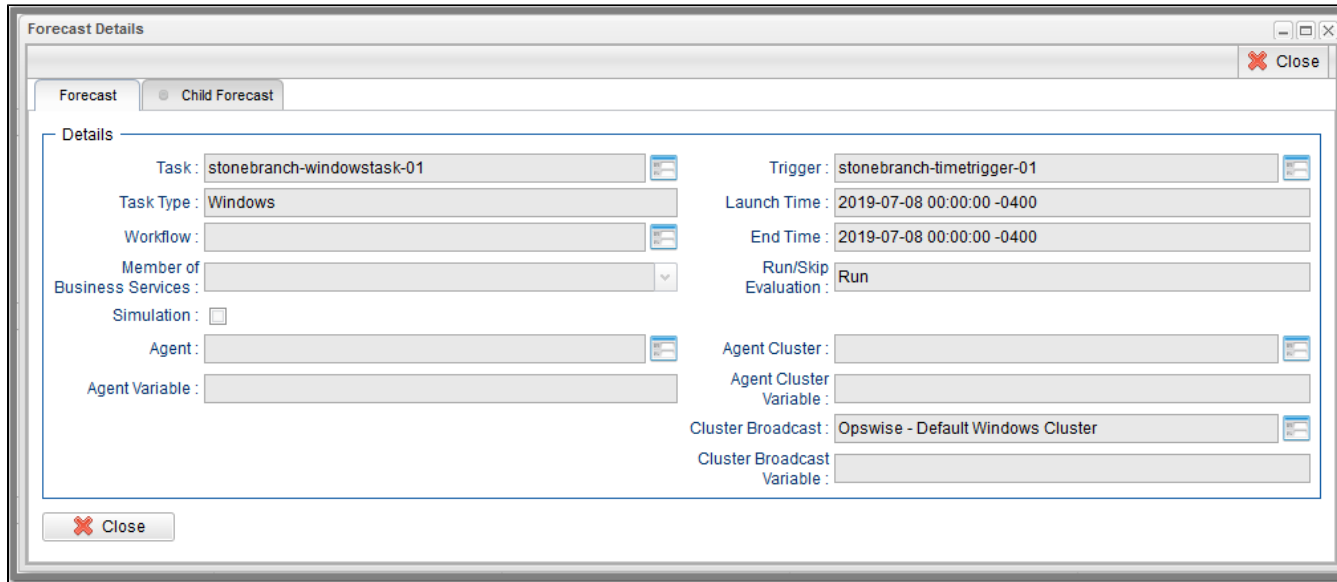
Click the Details icon next to any field to view Details of that record.

See the field descriptions below for a description of all fields in the Forecast Details.

Forecast Details Field Descriptions

The following table describes the fields and tabs that display in the Forecast Details.

Field Name	Description
Details	This section contains detailed information about the forecast.
Task	Name of the task selected in the Forecast Calendar. The icon is a link to the Task Details for this task.
Task Type	Task type of this task.
Workflow	For tasks included in a Workflow: Name of the Workflow in which this task is included. The icon is a link to the Workflow Details for this Workflow.
Member of Business Services	One or more Business Services that this task belongs to.
Trigger	Name of the trigger that will launch this task (or the Workflow in which this task is included). The icon is a link to to the Trigger Details for this trigger.
Launch Time	Calculated start time of this task.
End Time	Calculated end time of this task.

Run/Skip Evaluation	Evaluation, based on run/skip criteria specified for this task via the Workflow Task Details, of whether this task will run or skip when the Workflow is run. Tasks, including Workflows, launched directly by the trigger will always have a run/skip evaluation of **Run**. Likewise, tasks within a launched Workflow that do not have any run or skip defined will always have a run/skip evaluation of **Run**. Any task within a Workflow with run or skip utilizing variables will have a run/skip evaluation of **Not Evaluated**.
Simulation	Indication of whether or not this forecast is based on the simulated launch of this trigger.
Agent	Name of the Agent resource record that identifies the machine where the task will run.
Agent Variable	Variable that will be resolved at run time to the name of the Agent resource that identifies the machine where the task will run.
Agent Cluster	Name of the Agent Cluster resource record from which an Agent that identifies the machine where the task will run on is selected.
Agent Cluster Variable	Variable that will be resolved at run time to the name of the Agent Cluster resource from which an Agent that identifies the machine where the task will run on is selected.
Cluster Broadcast	Name of the Agent Cluster resource record that specifies the group of Agents to broadcast to. At launch time, an instance of the task will be created for each Agent in the cluster. Each instance displays separately in the Activity Monitor.
Cluster Broadcast Variable	Variable that will resolve at launch time to the name of the Agent Cluster resource record that specifies the group of Agents to broadcast to. At launch time, an instance of the task will be created for each Agent in the cluster. Each instance displays separately in the Activity Monitor.
Tabs	This section identifies the tabs across the top of the Forecast Details that provide access to additional information about the forecast.
Child Forecasts tab	For Workflows only; Displays a list of forecast information for tasks within this Workflow (see Forecast List, below).

Forecast Calculation

As the tasks are run, the Controller calculates the end time of each Forecast entry. The calculation is the average run time, based on task instances that already have run. This information is updated each time you display the forecast.

As task instances run within the Controller, task instance durations are collected, allowing the Controller to calculate their average run time. The average run time is used to determine the estimated end time provided on each Forecast entry. For task instances that run within a triggered Workflow, an average start offset within the Workflow, along with the average run time, are used to determine the estimated launch time and end time.

To reset the statistics information collected by the Controller for a particular task or Workflow, use the **Reset Statistics** command under Task Permissions.

Forecast Re-Calculation

Certain changes in the system will automatically cause a re-calculation of forecast data. However, not all changes will result in immediate re-calculation.

Changes to the Details of an enabled trigger that impact the schedule of that trigger or the tasks launched by that trigger will result in an immediate re-calculation of the Forecast data for that trigger.

Changes to the agent, agent variable, agent cluster, agent cluster variable, or broadcast cluster fields of a task will be reflected immediately in the any forecast data referring to that particular task.

Changes to the Details of a Workflow launched by a trigger or a calendar used by a trigger (including the custom days within the calendar) will result in the forecast data of an associated trigger being flagged for re-calculation, as indicated by the Forecast Recalculation Required field. Any forecast data flagged for re-calculation will be re-calculated automatically at 12:00 a.m. (midnight) daily.

Whenever Override Calendar options are modified for a workflow, any forecast data associated with that workflow will be flagged for recalculation at the midnight refresh.

Statistics for a particular task may not be available at the time the original forecast calculation occurs. Therefore, the accuracy of estimated end times for triggered tasks, as well as the estimated start and end times of tasks launched within a triggered Workflow, may be inaccurate. The current accuracy of a Forecast record is indicated by the End Time Accuracy field. The End Time Accuracy is based upon the number of task instance runs for which historical data has been collected *at the time of forecast calculation*. It can have one of the following values.

Runs	Accuracy
0	0
1	Low
2-9	Medium
10+	High

Any Forecast data with accuracy that can be improved significantly through re-calculation will be re-calculated automatically at 12:00 a.m. (midnight) daily.

For any Forecast data for which you wish to force an immediate re-calculation, use the **Recalculate Forecast** command from the Trigger record or from the Workflow record.

Note

By default, the Forecast Recalculation Required and End Time Accuracy columns are not included in the Forecasts list. However, you can add them to the list.

Setting up Forecasting

Warning

We strongly discourage enabling forecasting for very frequent and predictable trigger schedules.

For example, if you enable forecasting on a trigger that runs every 30 seconds, that would generate - at a minimum - 89,280 forecast records, based on the default configuration of 31 days of forecasting. If that trigger launches a Workflow task, it would generate an extra 89,280 forecast records per task within the workflow.

For these types of triggers, the forecast feature does not provide much insight, yet it requires a very large amount of processing to compute.

Use the following points as a checklist when setting up forecasting:

- Forecasting is supported for the following trigger types: Time, Temporary, and Cron.
- In the trigger Details, enable the **Forecast** field.
- Specify the number of days for which you want scheduled tasks to display in the Forecast Calendar / Forecast List (default is 31):
    1. From the **Administration** navigation pane, select **Configuration > Properties**. (You need administrative privileges to access this function.)
    2. Click **Forecast Period In Days** Value column and enter the number of days you want in the forecast period.
- Enable the trigger. (Disabling the trigger removes all related entries from the Forecast calendar / Forecast list.)

Next Scheduled Time

For enabled Time, Temporary, and Cron triggers, the Controller calculates the next scheduled time and displays it on the Triggers list, as well as on the All Triggers and Active Triggers lists, for those trigger types.

The next scheduled time also displays in the trigger Details:

Overdue Timers

If the Controller has been stopped for a significant amount of time (more than two days), upon start-up, and under certain conditions, overdue Triggers could be ignored and disabled. If a Trigger's timer (the Trigger's next scheduled time) is considered "stale/expired," the timer will be ignored and the associated Trigger will be disabled.

If this occurs, there will be log messages similar to the following:

```
Found overdue timer exceeding restart threshold limit of 2 days. Timer overdue by: 3 Days 1 Hour 57 Minutes 52 Seconds (2016-06-27 14:15:00 -0400) ****
Timer is being cancelled *** TriggerTimerHandlerBean [...]

Disabling Trigger since stale timer was found and the next scheduled time was stale TimeTriggerBean [...]
```

A "stale/expired" trigger is calculated based on the value of the uc.overdue.timer.startup.threshold Universal Controller start-up property (default is 2 days). If the default is specified, any enabled Trigger with a next scheduled time older than two days will be considered "stale/expired."

The property can be changed to a larger amount to avoid this behavior, if desired.
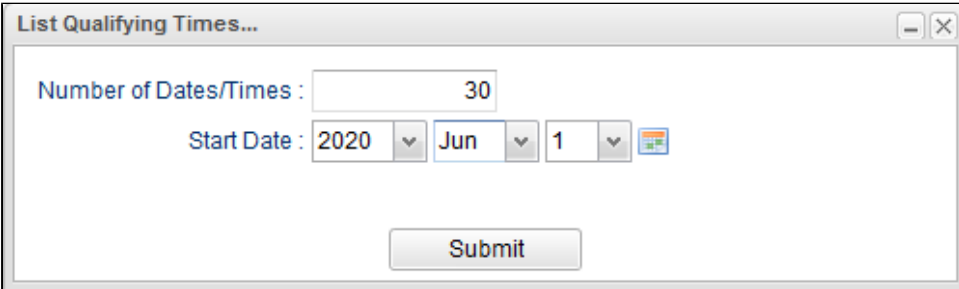
List Qualifying Times

For Time and Cron triggers, you can display a list of dates and times for when the trigger (if enabled) will be satisfied.

Note

⚠️

This list differs from the Forecasts list, which shows scheduled task instances as opposed to qualifying times.

Step 1	In the trigger Details for a Cron or Time trigger, click the **List Qualifying Times** button. A **List Qualifying Times Input** pop-up dialog displays.
Step 2	In the **Number of Dates/Times** field, enter the number of dates and times that you want to be listed (default = 30, maximum = 1000).
Step 3	Enter / select a **Start Date** from when you want the list of Dates and Times to begin.
Step 4	Click the **Submit** button to display a table of **Qualifying Dates and Times**.

List Qualifying Times...
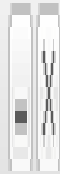
Number of Dates/Times :   30

Start Date : 2020 ▾ Jun ▾ 1 ▾
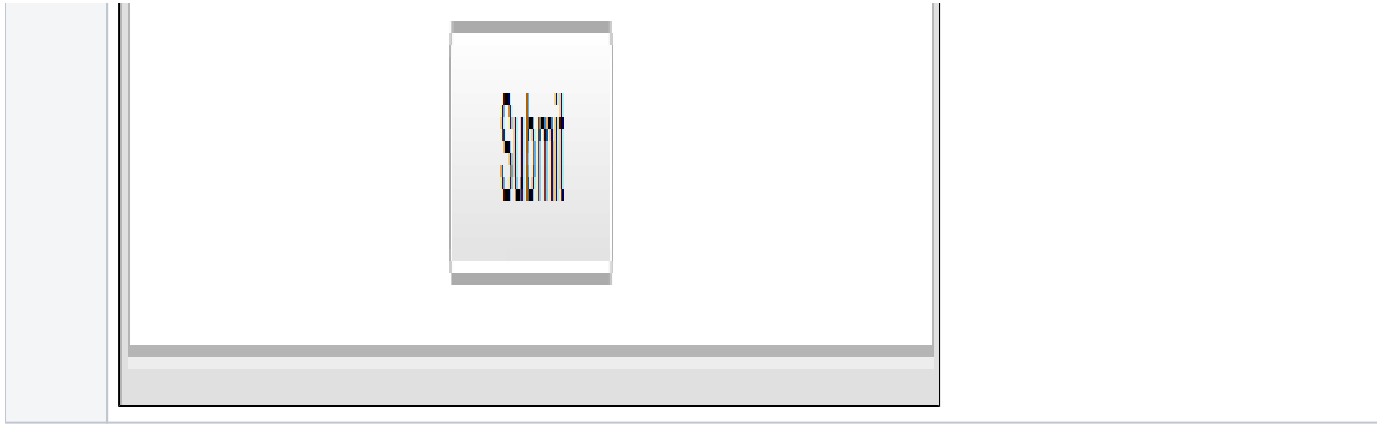
Calendars

- Overview
- Setting up Calendars
- Using Calendars

Overview

Calendars define business days, holidays, and other special days. Universal Controller uses calendars, in conjunction with triggers, to define when tasks are run.

Setting up Calendars

The process for setting up your calendars is:

Create global custom days	Create the global custom days that you will need for any of your calendars.
Create calendars	Create one or more calendars that will need for any of your triggers.
Assign global custom days to calendars	Assign one or more of the global custom days to one or more of the calendar(s).
Create local custom days	Create any local custom days to be used only by the Calendars for which they were created.
Create copies of calendars	Create one or more copies of any calendar, as desired.

You can assign a global custom day, which can be used by any calendar, to a calendar either from the Custom Day or from the Calendar.

A local custom day, which can used used only by the calendar for which it was created, is automatically assigned to that calendar.

Using Calendars

The Controller uses the calendar specified in a trigger to determine the run dates for the task(s) specified in that trigger:

- If you select Business Days in a trigger, the calendar identifies those business days.
- If you select Day Style = Complex in a trigger:
    - All custom days - for a single day - attached to the calendar are selectable day types (in the trigger's Date Noun drop-down menu).
    - All custom days - for a period of days - attached to the calendar are selectable day types (in the trigger's Date Qualifier drop-down menu).
- If you select Special Restriction in a trigger, the calendar defines the Holidays or Non Business days.

Creating Custom Days

Overview

A Custom Day defines a single one-time date, a repeating date, or a list of dates. Custom Days are assigned to Calendars.

There are two types of Custom Days:

Custom Days	Custom Days are global custom days; they can be assigned to any Calendar. You create a Custom Day via the **Custom Days** page, which is accessed via the Automation Center navigation pane.
Local Custom Days	Local Custom Days are assigned automatically only to the Calendar for which they were created. You create a Local Custom Day via the Local Custom Days tab in a Calendar Details.

Creating (Global) Custom Days

Note

⚠️ The Custom Day Global Permitted Universal Controller system property must be set to **true** (the default) in order for you to create global Custom Days. If Custom Days already exist on the Controller, you cannot set the property to **false**.

Step 1	From the Automation Center navigation pane, select **Other > Custom Days**. The Custom Days list displays. Below the list, Custom Day Details for a new Custom Day displays.
Step 2	Enter / select Details for a new Custom Day, 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 a **Save** button. The Custom Day is added to the database, and all buttons and tabs in the 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).

Custom Day Details

The following Custom Day Details is for an existing Custom Day.

Depending on the values that you enter / select for these fields, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Custom Day Details.
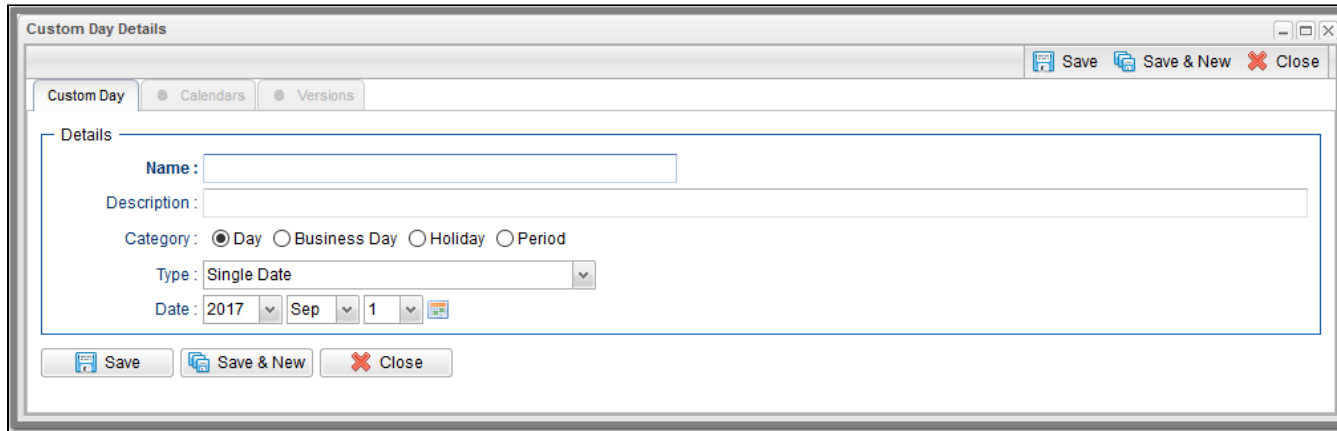
For information on how to access additional details - such as Metadata and complete database Details - for Custom Days (or any type of record), see Records.

Custom Day Details Field Descriptions
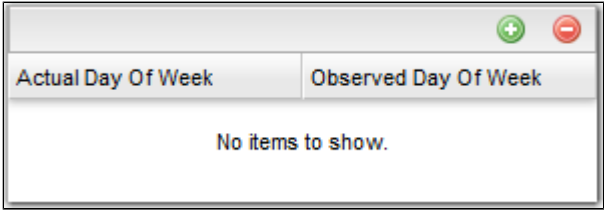
The following table describes the fields, buttons, and tabs that display in the Custom Day Details.

Field Name	Description
Details	This section contains detailed information about the Custom Day.
Name	Name of this Custom Day.
Version	System-supplied; version number of the current record, which is incremented by the system every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this Custom Day.

Category	Category of this Custom Day.
	Options:

Day	This Custom Day defines any day.
Business Day	This Custom Day defines a business day.
Holiday	This Custom Day defines a holiday. Dates flagged as holidays become involved when the user enables Special Restriction on a trigger and selects a situation of On Holiday.
Period	This Custom Day defines a custom period of days (for example: quarters, fiscal year, or 4-5-4 calendar).

You can select a Period Custom Day in:

- Date Qualifier field for Time Triggers and Composite Trigger Time Components.
- Restriction Qualifier field for all triggers (except Manual and Temporary triggers) and all Composite Trigger Components.
- Complex Qualifier field for Task Run Criteria.

You can select Day, Business Day, and Holiday Custom Days in:

- Date Noun field for Time triggers and Composite Trigger Time Components.
- Restriction Noun field for all triggers (except Manual and Temporary triggers) and all Composite Trigger Components.
- Complex Noun field for Task Run Criteria.

Type	Type of Custom Day.
	Options:
	- **Single Date** - Any one-time date.
	- **Relative Repeating Date** - An annual (repeating) date that changes from year to year. For example, the U.S. Thanksgiving falls on the 4th Thursday of November, and is therefore on a different date every year.
	- **Absolute Repeating Date** - An annual (repeating) date that does not change from year to year. For example, the Canadian holiday Canada Day falls on July 1st of every year.
	- **List of Dates** - The dates are listed below.

Date (yyyy-mm-dd)	If Type = Single Date; specific date for this Custom Day (selected from the drop-down lists or the Calendar tool).

Dates	If Type = List of Dates; multiple specific dates for this Custom Day.
	The icons at the top of the list let you perform the following tasks:

	Add Dates	Displays a Date Picker dialog that lets you: • Add one or more Dates to the list. • Clear all Dates from the list. • Display a list of selected Dates.
	Add item	Lets you add a single Date to the list.
	Remove selected item	Lets you remove one or more selected Dates from the list.
	Remove Past Dates	Lets you remove all Dates prior to the current Date from the list.

Note

The Purge Dates From Custom Day List Older Than Universal Controller system property lets you automatically purge dates from a List of Dates.

When	If Type = Relative Repeating Date; Occurrence of this day in the month. Options: 1st, 2nd, 3rd, 4th, Last, Last Day, Last Business Day, Every, Nth. Example: The 4th Thursday of November.
Nth Amount	If Category = Day, Business Day, or Holiday and When = Nth; Value of N.

Nth Type	If When = Nth; Type of Nth Day. Options: • Day • Business Day Default is Day. **Note** ⚠️ Business Day is not allowed if Category is Holiday or Business Day.
Day Of Week	If Type = Relative Repeating Date and When is 1st, 2nd, 3rd, 4th, Last, or Every; Day of the week. Example: The 4th Thursday of November.
Month	If Type = Relative Repeating Date or Absolute Repeating Date; Month of the year, or All. Example: The fourth Thursday of November.
Day	If Type = Absolute Repeating Date; Day of the month (1 through 31). Example: December 25.
Adjustment	If Type = Relative Repeating Date; Allows you to adjust the Relative Repeating Date by a less or plus number of Days or Business Days. Options: • - - None - - • Less • Plus Default is - - None - -. **Note** ⚠️ The Adjustment field is not available if the Category is Period.
Adjustment Amount	If Adjustment = Less or Plus; Allows you to specify the number of Days or Business Days to adjust the Relative Repeating Date. Maximum is 366. Default is 1.
Adjustment Type	If Adjustment = Less or Plus; Allows you to specify the type of day by which to adjust the Relative Repeating Date. Options: • Day • Business Day Default is Day. **Note** ⚠️ Business Day is not allowed if Category is Holiday or Business Day.

Observed Rules	If Category = Holiday and Type = Relative Repeating Date or Absolute Repeating Date; Allows you to specify the actual day of the week on which the holiday occurs and a day of the week on which you want the holiday observed. You can specify any number of actual days of the week for a holiday, and any corresponding observed days. The specified observed day for a holiday is the day of the week closest to the holiday, whether it is a preceding day or a following day. For example, if you specify the day of the week for a holiday as Sunday, and the observed day as Monday, the observed day will be the Monday following the Sunday holiday, since that is the Monday closest to the holiday. Similarly, if you specify the day of the week for a holiday as Saturday, and the observed day as Friday, the observed day will be the Friday preceding the Saturday holiday, since that is the Friday closest to the holiday.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Custom Day Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
List Qualifying Dates	If Period is not enabled and Type is not Single Date; Displays a list of the next 30 dates on which this day occurs (see Generating a List of Qualifying Dates, below).
List Qualifying Periods	If Period is enabled; Displays a list of the next 30 periods in which this day occurs (see Generating a List of Qualifying Periods, below).

Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.
Tabs	This section identifies the tabs across the top of the Custom Day Details that provide access to additional information about the task instance.
Calendars	Displays all calendars that use this custom day.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Creating Local Custom Days

Step 1	Open a Calendar for which you want to create a Local Custom Day.
Step 2	Click the Local Custom Days tab to display a list of existing Local Custom Days for that Calendar.
Step 3	Click the **New** button to display Local Custom Day Details for a new Local Custom Day.

Step 4	Enter / select Details for a new Custom Day, 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 5	Click a **Save** button. The Custom Day is added to the database, and all buttons and tabs in the Details are enabled.

Local Custom Day Details

The following Local Custom Day Details is for an existing Local Custom Day.

Depending on the values that you enter / select for these fields, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Custom Day Details.
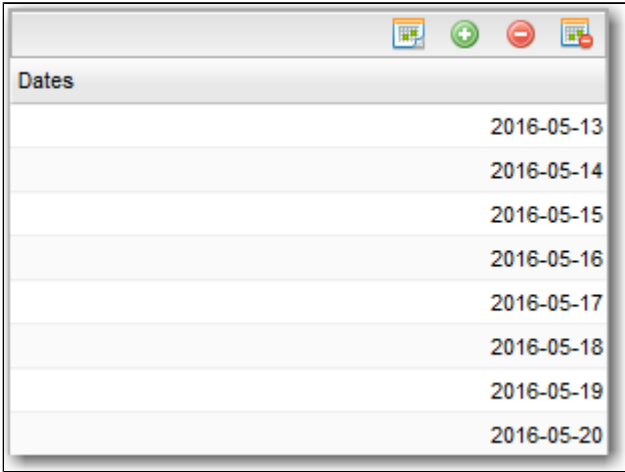
For information on how to access additional details - such as Metadata and complete database Details - for Local Custom Days (or any type of record), see Records.

Local Custom Day Details Field Descriptions
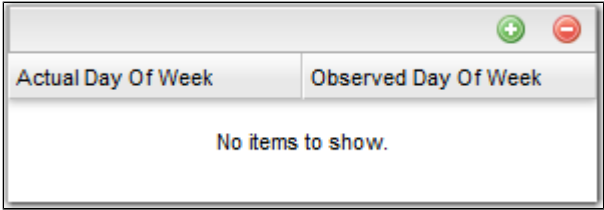
The following table describes the fields, buttons, and tabs that display in the Local Custom Day Details.

Field Name	Description

Details	This section contains detailed information about the Custom Day.
Name	Name of this Custom Day.
Calendar	Read only; Calendar for which this Local Custom Day was created. Note ⚠ This field displays only if the Local Custom Day Details is opened: • From a reference item. • From a report on the Local Custom Day table (ops_local_custom_day). • In a tab from the Local Custom Days list.
Description	Description of this Custom Day.
Category	Category of this Custom Day. Options:

Day	This Custom Day defines any day.
Business Day	This Custom Day defines a business day.
Holiday	This Custom Day defines a holiday. Dates flagged as holidays become involved when the user enables Special Restriction on a trigger and selects a situation of On Holiday.
Period	This Custom Day defines a custom period of days (for example: quarters, fiscal year, or 4-5-4 calendar).

You can select a Period Custom Day in:

- Date Qualifier field for Time Triggers and Composite Trigger Time Components.
- Restriction Qualifier field for all triggers (except Manual and Temporary triggers) and all Composite Trigger Components.
- Complex Qualifier field for Task Run Criteria.

You can select Day, Business Day, and Holiday Custom Days in:

- Date Noun field for Time triggers and Composite Trigger Time Components.
- Restriction Noun field for all triggers (except Manual and Temporary triggers) and all Composite Trigger Components.
- Complex Noun field for Task Run Criteria.

Type	Type of Custom Day.
	Options:
	Single Date - Any one-time date. **Relative Repeating Date** - An annual (repeating) date that changes from year to year. For example, the U.S. Thanksgiving falls on the 4th Thursday of November, and is therefore on a different date every year. **Absolute Repeating Date** - An annual (repeating) date that does not change from year to year. For example, the Canadian holiday Canada Day falls on July 1st of every year. **List of Dates** - The dates are listed below.
Date (yyyy-mm-dd)	If Type = Single Date; specific date for this Custom Day (selected from the drop-down lists or the Calendar tool).
Dates	If Type = List of Dates; multiple specific dates for this Custom Day.

The icons at the top of the list let you perform the following tasks:

	Add Dates	Displays a Date Picker dialog that lets you: - Add one or more Dates to the list. - Clear all Dates from the list. - Display a list of selected Dates.
	Add item	Lets you add a single Date to the list.
	Remove selected item	Lets you remove one or more selected Dates from the list.
	Remove Past Dates	Lets you remove all Dates prior to the current Date from the list.

When	If Type = Relative Repeating Date; Occurrence of this day in the month. Options: 1st, 2nd, 3rd, 4th, Last, Last Day, Last Business Day, Every. Example: The 4th Thursday of November.
Nth Amount	If Category = Day, Business Day, or Holiday and When = Nth; Value of N.
Nth Type	If When = Nth; Type of Nth Day. Options: • Day • Business Day Default is Day.
Day Of Week	If Type = Relative Repeating Date; Day of the week. Example: The 4th Thursday of November.
Month	If Type = Relative Repeating Date or Absolute Repeating Date; Month of the year, or All. Example: The fourth Thursday of November.
Day	If Type = Absolute Repeating Date; Day of the month (1 through 31). Example: December 25.
Adjustment	If Type = Relative Repeating Date; Allows you to adjust the Relative Repeating Date by a less or plus number of Days or Business Days. Options: • - - None - - • Less • Plus Default is - - None - -. Note ⚠ The Adjustment field is not available if the Category is Period.
Adjustment Amount	If Adjustment = Less or Plus; Allows you to specify the number of Days or Business Days to adjust the Relative Repeating Date. Maximum is 366. Default is 1.
Adjustment Type	If Adjustment = Less or Plus; Allows you to specify the type of day by which to adjust the Relative Repeating Date. Options: • Day • Business Day Default is Day. Note ⚠ Business Day is not allowed if Category is Holiday or Business Day.

Observed Rules	If Category = Holiday and Type = Relative Repeating Date or Absolute Repeating Date; Allows you to specify the actual day of the week on which the holiday occurs and a day of the week on which you want the holiday observed. You can specify any number of actual days of the week for a holiday, and any corresponding observed days. The specified observed day for a holiday is the day of the week closest to the holiday, whether it is a preceding day or a following day. For example, if you specify the day of the week for a holiday as Sunday, and the observed day as Monday, the observed day will be the Monday following the Sunday holiday, since that is the Monday closest to the holiday. Similarly, if you specify the day of the week for a holiday as Saturday, and the observed day as Friday, the observed day will be the Friday preceding the Saturday holiday, since that is the Friday closest to the holiday.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Custom Day Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
List Qualifying Dates	If Period is not enabled and Type is not Single Date; Displays a list of the next 30 dates on which this day occurs (see Generating a List of Qualifying Dates, below).
List Qualifying Periods	If Period is enabled; Displays a list of the next 30 periods in which this day occurs (see Generating a List of Qualifying Periods, below).

Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.
Tabs	This section identifies the tabs across the top of the Custom Day Details that provide access to additional information about the task instance.
Calendars	Displays all calendars that use this custom day.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Generating a List of Qualifying Dates

The Controller allows you to generate a list of future dates that that a Custom Day (global or Local) will qualify for.

Note

⚠️

Since Business Days are defined by a Calendar and its Custom Days (if the Exclude Holidays For Business Days Universal Controller system property is set to true), specifying a Business Day Adjustment Type requires that the Custom Day belong to at least one Calendar in order to generate a list of qualifying dates.

The following error message will display if you try to generate a list of qualifying dates before adding the Custom Day to a Calendar:

`Custom Day has Business Day adjustment type and must be associated with at least one Calendar before List Qualifying Dates can be executed.`
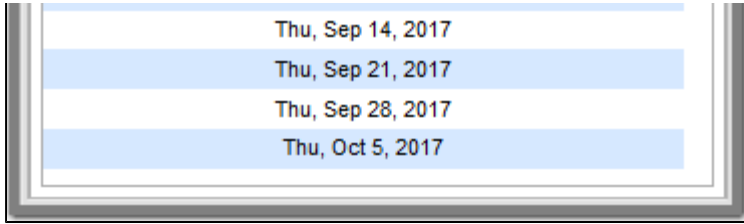
Step 1	Click the List Qualifying Dates button in the Custom Day Details.
Step 2	If the Custom Day does not specify a Business Day Adjustment Type, a list of Qualifying Dates for the Custom Day displays.

Qualifying Dates — □ ✕

stonebranch-customday-01

Fridays

📅 Calendar: stonebranch-calendar-01

Qualifying Dates
Thu, Mar 16, 2017
Thu, Mar 23, 2017
Thu, Mar 30, 2017
Thu, Apr 6, 2017
Thu, Apr 13, 2017
Thu, Apr 20, 2017
Thu, Apr 27, 2017
Thu, May 4, 2017
Thu, May 11, 2017
Thu, May 18, 2017
Thu, May 25, 2017
Thu, Jun 1, 2017
Thu, Jun 8, 2017
Thu, Jun 15, 2017
Thu, Jun 22, 2017
Thu, Jun 29, 2017
Thu, Jul 6, 2017
Thu, Jul 13, 2017
Thu, Jul 20, 2017
Thu, Jul 27, 2017
Thu, Aug 3, 2017
Thu, Aug 10, 2017
Thu, Aug 17, 2017
Thu, Aug 24, 2017
Thu, Aug 31, 2017
Thu, Sep 7, 2017

	Thu, Sep 14, 2017
	Thu, Sep 21, 2017
	Thu, Sep 28, 2017
	Thu, Oct 5, 2017

Step 3	If the Custom Day specifies a Business Day Adjustment Type, the List Qualifying Dates Input dialog displays when you click the List Qualifying Dates button.

List Qualifying Dates Input

Calendar :

Submit   Cancel
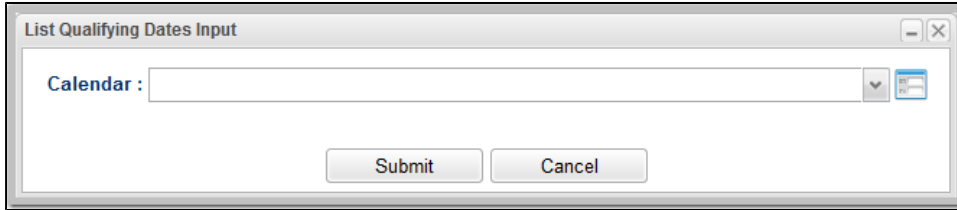
Select a Calendar and click **Submit** to see list of Qualifying Dates for the selected Calendar, which is identified at the top of the list.

Note

⚠️

This step does not apply to Local Custom Days, since each Local Custom Day belongs to a single calendar.

Generating a List of Qualifying Periods

Step 1	Click the List Qualifying Period button in the Custom Day Details.
Step 2	A list of Qualifying Periods for the Custom Day displays.

Qualifying Periods

stonebranch-customday-01

Fridays

Qualifying Periods	
Start Date	End Date
Fri, Mar 10, 2017	Thu, Mar 16, 2017
Fri, Mar 17, 2017	Thu, Mar 23, 2017
Fri, Mar 24, 2017	Thu, Mar 30, 2017
Fri, Mar 31, 2017	Thu, Apr 6, 2017
Fri, Apr 7, 2017	Thu, Apr 13, 2017
Fri, Apr 14, 2017	Thu, Apr 20, 2017
Fri, Apr 21, 2017	Thu, Apr 27, 2017
Fri, Apr 28, 2017	Thu, May 4, 2017
Fri, May 5, 2017	Thu, May 11, 2017
Fri, May 12, 2017	Thu, May 18, 2017
Fri, May 19, 2017	Thu, May 25, 2017
Fri, May 26, 2017	Thu, Jun 1, 2017
Fri, Jun 2, 2017	Thu, Jun 8, 2017
Fri, Jun 9, 2017	Thu, Jun 15, 2017
Fri, Jun 16, 2017	Thu, Jun 22, 2017
Fri, Jun 23, 2017	Thu, Jun 29, 2017
Fri, Jun 30, 2017	Thu, Jul 6, 2017
Fri, Jul 7, 2017	Thu, Jul 13, 2017
Fri, Jul 14, 2017	Thu, Jul 20, 2017
Fri, Jul 21, 2017	Thu, Jul 27, 2017
Fri, Jul 28, 2017	Thu, Aug 3, 2017
Fri, Aug 4, 2017	Thu, Aug 10, 2017
Fri, Aug 11, 2017	Thu, Aug 17, 2017
Fri, Aug 18, 2017	Thu, Aug 24, 2017
Fri, Aug 25, 2017	Thu, Aug 31, 2017
Fri, Sep 1, 2017	Thu, Sep 7, 2017
Fri, Sep 8, 2017	Thu, Sep 14, 2017
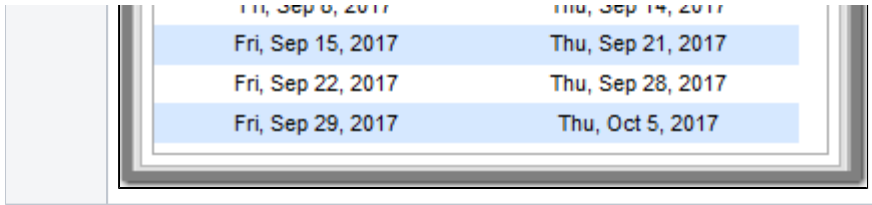
Assigning a Custom Day to a Calendar

There are two ways to assign a Custom Day to a Calendar from Custom Day Details:

1. Assign a Custom Day to an Existing Calendar
2. Create a Calendar and Assign the Custom Day to It

Assign a Custom Day to an Existing Calendar

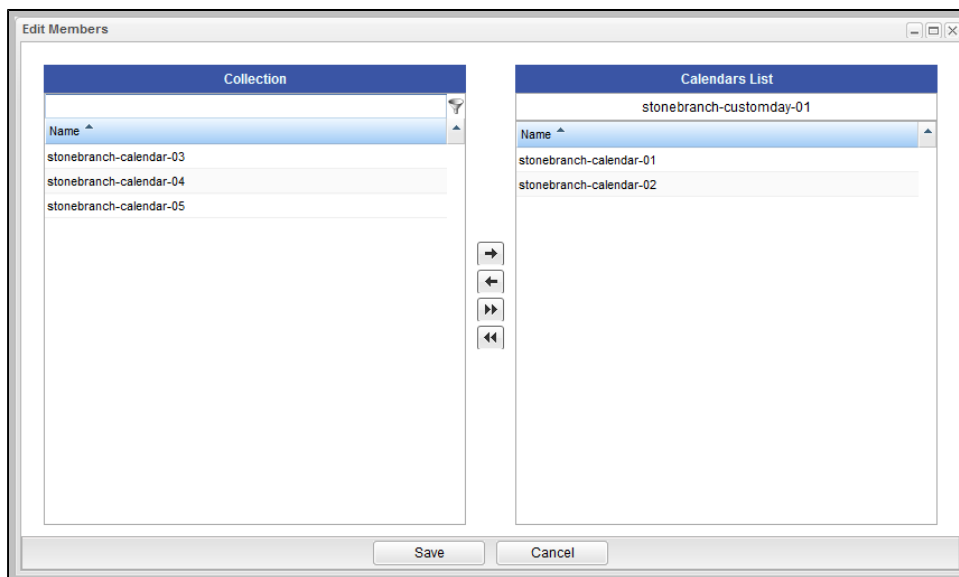| Step 1	Display the Custom Day Details of the Custom Day that you want to assign to a Calendar.
Step 2	Click the **Calendars** tab. A list of any Calendars to which the Custom Day is assigned displays.

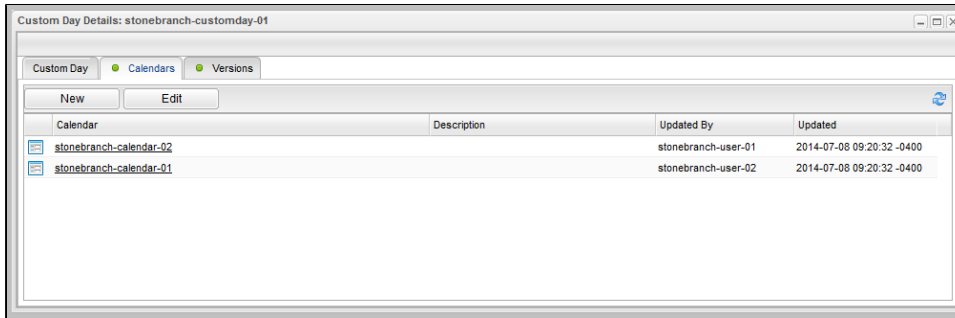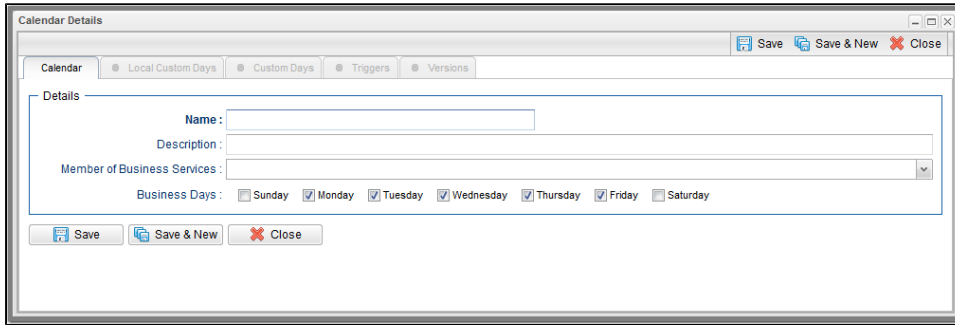| Step 3	Click the **Edit** button. The Edit Members pop-up dialog displays:
	• The **Collection** window lists Calendars to which the Custom Day is not assigned. • The **Calendars List** lists Calendars to which the Custom Day is assigned.
Step 4	To filter the Calendars listed in the Collection window, enter characters in the text field above the **Name** column. Only Calendars containing that sequence of characters will display in the list.
Step 5	To assign the Custom Day to a Calendar, move the Calendar from the **Collection** window to the **Calendars List** window: 1. To move a single Calendar, double-click it or click it once and then click the **>** arrow. 2. To move multiple Calendars, Ctrl-click them and then click the **>** arrow. 3. To move all Calendars, click the **>>** arrow. To unassign the Custom Day to a Calendar, move the Calendar from the **Calendars List** windows to the **Collection** window: 1. To move a single Calendar, double-click it or click it once and then click the **<** arrow. 2. To move multiple Calendars, Ctrl-click them and then click the **<** arrow. 3. To move all Calendars, click the **<<** arrow.
Step 6	Click **Save**.

Create a Calendar and Assign the Custom Day to It

Step 1	Display the Custom Day Details of the Custom Day that you want to assign to a new Calendar.

Step 2	Click the **Calendars** tab. The Calendars list displays a list of any Calendars to which the Custom Day already is assigned.
Step 3	Click the **New** button. A Calendar Details pop-up for a new Calendar displays.
Step 4	Enter / select Details for a new Calendar (see Calendar Details Field Descriptions).
Step 5	Click **Save** to create the Calendar, assign the Custom Day to it, and add it to the list of all Calendars.

Creating Calendars

Creating a Calendar

Step 1	From the Automation Center navigation pane, select **Other > Calendars**. The Calendars list displays.
	Below the list, Calendar Details for a new Calendar displays.
	Note
	⚠️ System Default, the default system calendar, defines the work week.

| **Step 2**	Enter / select Details for a new Calendar, 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 a **Save** button. The Calendar is added to the database, and all buttons and tabs in the 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).

Calendars List Columns

The following Field Picker pop-up dialog identifies the Calendars list columns that are:
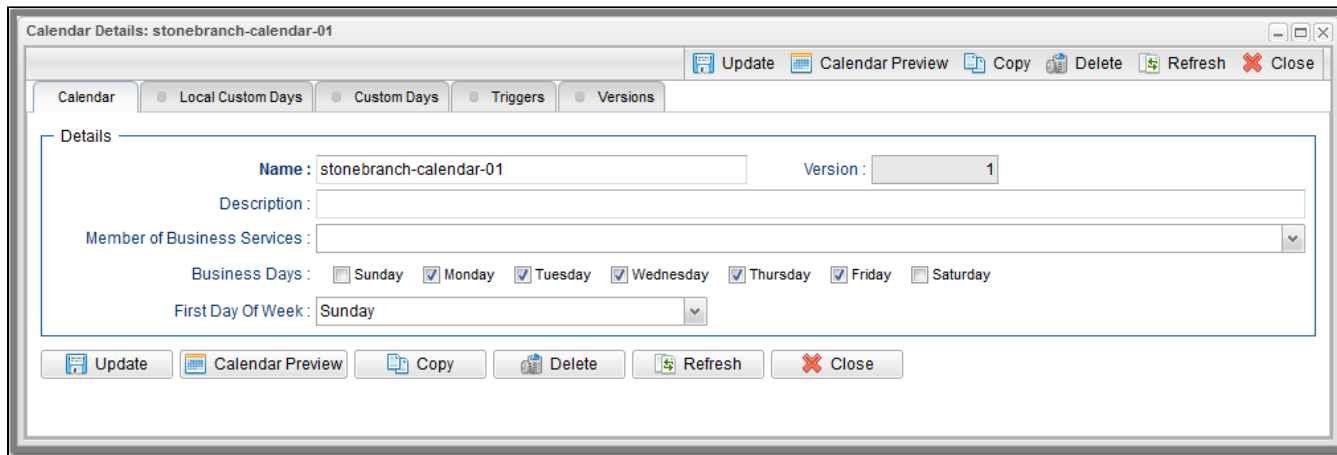
- **Visible** by default.
- **Available** to be made visible.
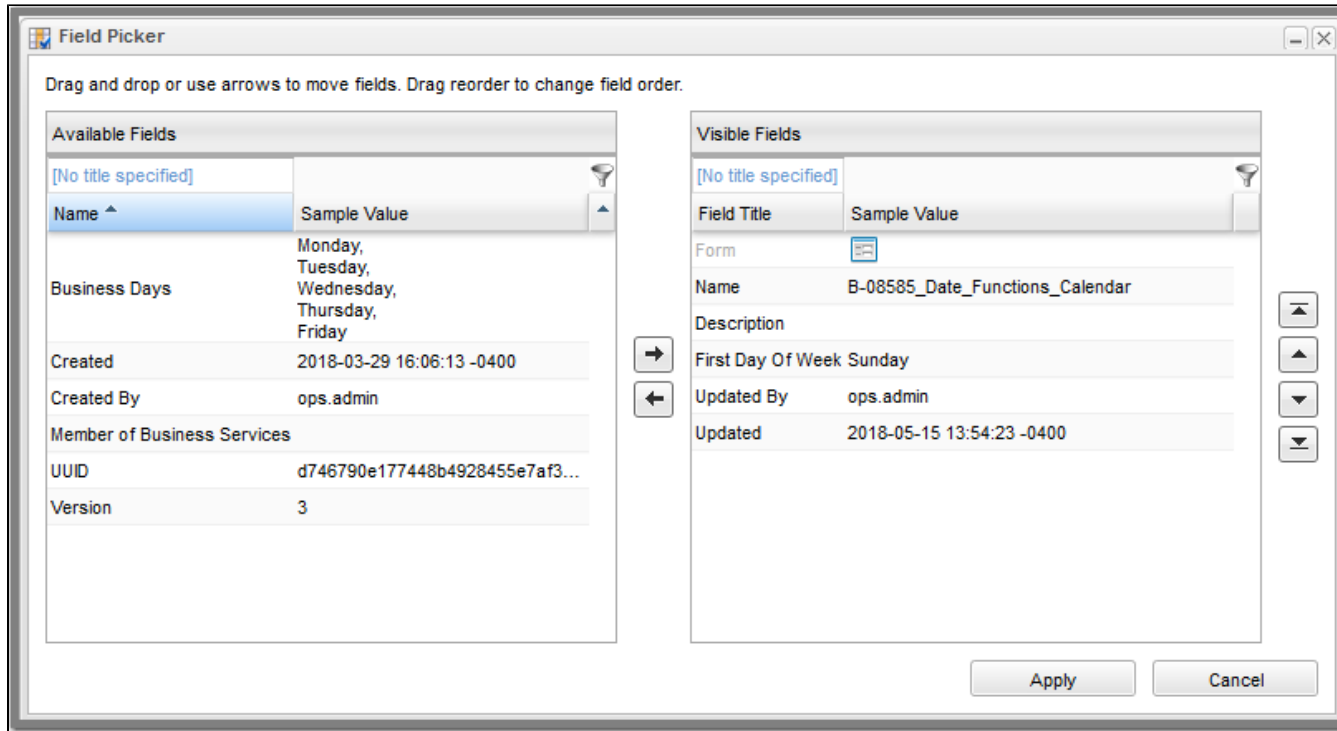
Calendar Details

The following Calendar Details is for an existing Calendar.

See the field descriptions, below, for a description of all fields that display in the Calendar Details.

For information on how to access additional details - such as Metadata and complete database Details - for Calendars (or any type of record), see Records.

Calendar Details Field Descriptions

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

Field Name	Description
Details	This section contains detailed information about the Calendar.
Name	Required. Name used within the Controller to identify this calendar. Up to 40 alphanumerics. It is the responsibility of the user to develop a workable naming scheme for calendars.
Member of Business Services	User-defined; allows you to select one or more Business Services that this record belongs to. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Description	User-defined; description for the calendar.
Business Days	User-defined; allows the user to select which days of the week constitute business days for this calendar.
First Day Of Week	Day that is considered the start of the week.

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.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Calendar Preview	Provides a month-by-month display, for the number of years specified in the Calendar Preview Period In Years Universal Controller system property (starting from the end of the current year), of all Custom Days defined for this calendar.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this calendar.
Update	Saves updates to the record.
Tabs	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task instance.
Local Custom Days	Lists all local custom days associated with this calendar.
Custom Days	Lists all global custom days associated with this calendar. Note ⚠️ The **Custom Days** tab displays in Calendar Details only if the Custom Day Global Permitted Universal Controller system property is set to **true**.

|	
Triggers	Lists all triggers that use this calendar.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

Assigning a Custom Day to a Calendar

There are two ways to assign a Custom Day to a Calendar from Calendar Details:

1. Assign an Existing Custom Day to a Calendar
2. Create a Custom Day and Assign It to a Calendar

Assign an Existing Custom Day to a Calendar

Step 1	Display the Calendar Details of the calendar to which you want to assign a Custom Day.
Step 2	Click the **Custom Days** tab. The Custom Days list displays a list of any global Custom Days assigned to this Calendar.
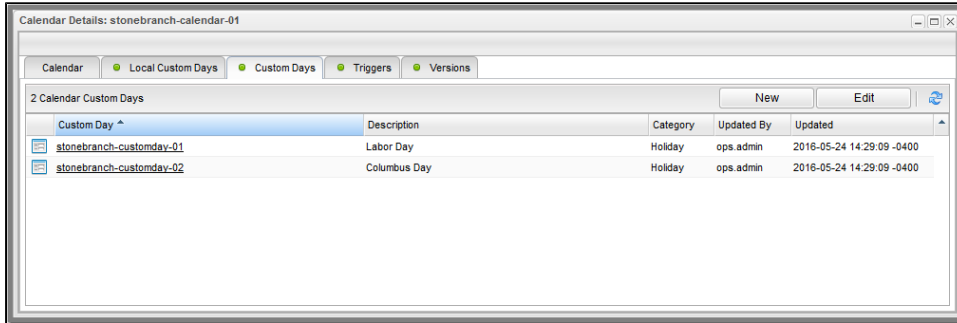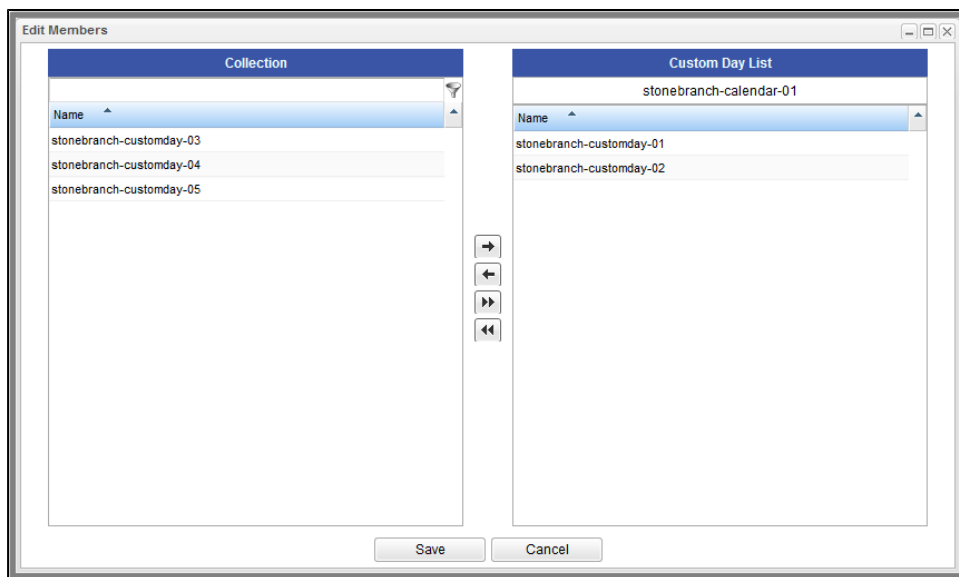
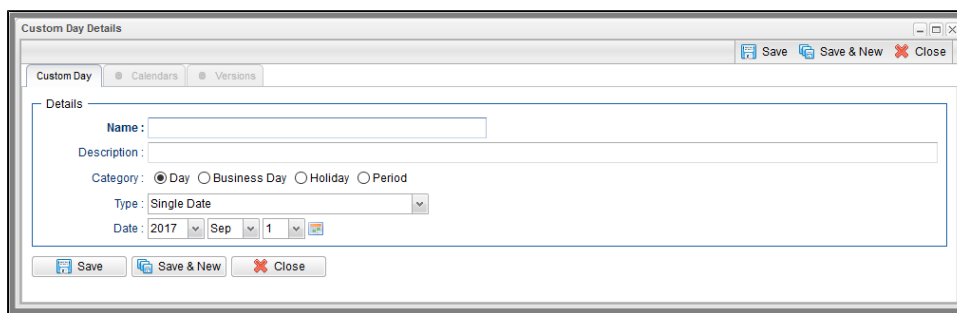| Step 3	Click the **Edit** button. The Edit Members pop-up dialog displays:
	• The **Collection** window lists Custom Days that are not assigned to this calendar. • The **Custom Days List** lists Custom Days that are assigned to this calendar.
Step 4	To filter the Custom Days listed in the Collection window, enter characters in the text field above the **Name** column. Only Custom Days containing that sequence of characters will display in the list.
Step 5	To assign a Custom Day to the calendar, move it from the **Collection** window to the **Custom Days List** window: 1. To move a single Custom Day, double-click it or click it once and then click the **>** arrow. 2. To move multiple Custom Days, Ctrl-click them and then click the **>** arrow. 3. To move all Custom Days, click the **>>** arrow. To unassign a Custom Day to the calendar, move it from the **Custom Days List** windows to the **Collection** window: 1. To move a single Custom Day, double-click it or click it once and then click the **<** arrow. 2. To move multiple Custom Days, Ctrl-click them and then click the **<** arrow. 3. To move all Custom Days, click the **<<** arrow.
Step 6	Click **Save**.

Create a Custom Day and Assign It to a Calendar

Step 1	Display the Calendar Details of the calendar to which you want to assign a global Custom Day.
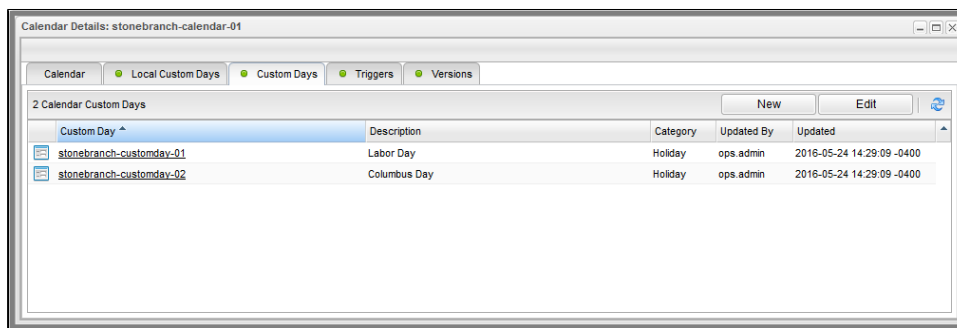
Step 2	Click the **Custom Days** tab. The Custom Days list displays a list of any global Custom Days assigned to this Calendar.
Step 3	Click the **New** button. A Custom Day Details pop-up for a new global Custom Day displays.
Step 4	Enter / select Details for a new Custom Day (see Custom Day Details Field Descriptions).
Step 5	Click **Save** to create the Custom Day, assign it to the Calendar, and add it to the list of all Custom Days.

Note

⚠

You also can assign a Custom Day to a Calendar from the Custom Day Details for that Custom Day (see Creating Custom Days).

# Creating a Local Custom Day for a Calendar

You can create a Local Custom Day for a Calendar from the Local Custom Days tab in the Calendar Details.

Local Custom Days are assigned automatically to the Calendar for which they were created. You cannot assign a Local Custom Day to any other Calendar.

Calendar Preview

If you click the Calendar Preview button in the Calendar Details, the Controller provides a month-by-month display, for the number of years specified in the Calendar Preview Period In Years Universal Controller system property (starting from the end of the current year), of all Custom Days defined for this calendar.
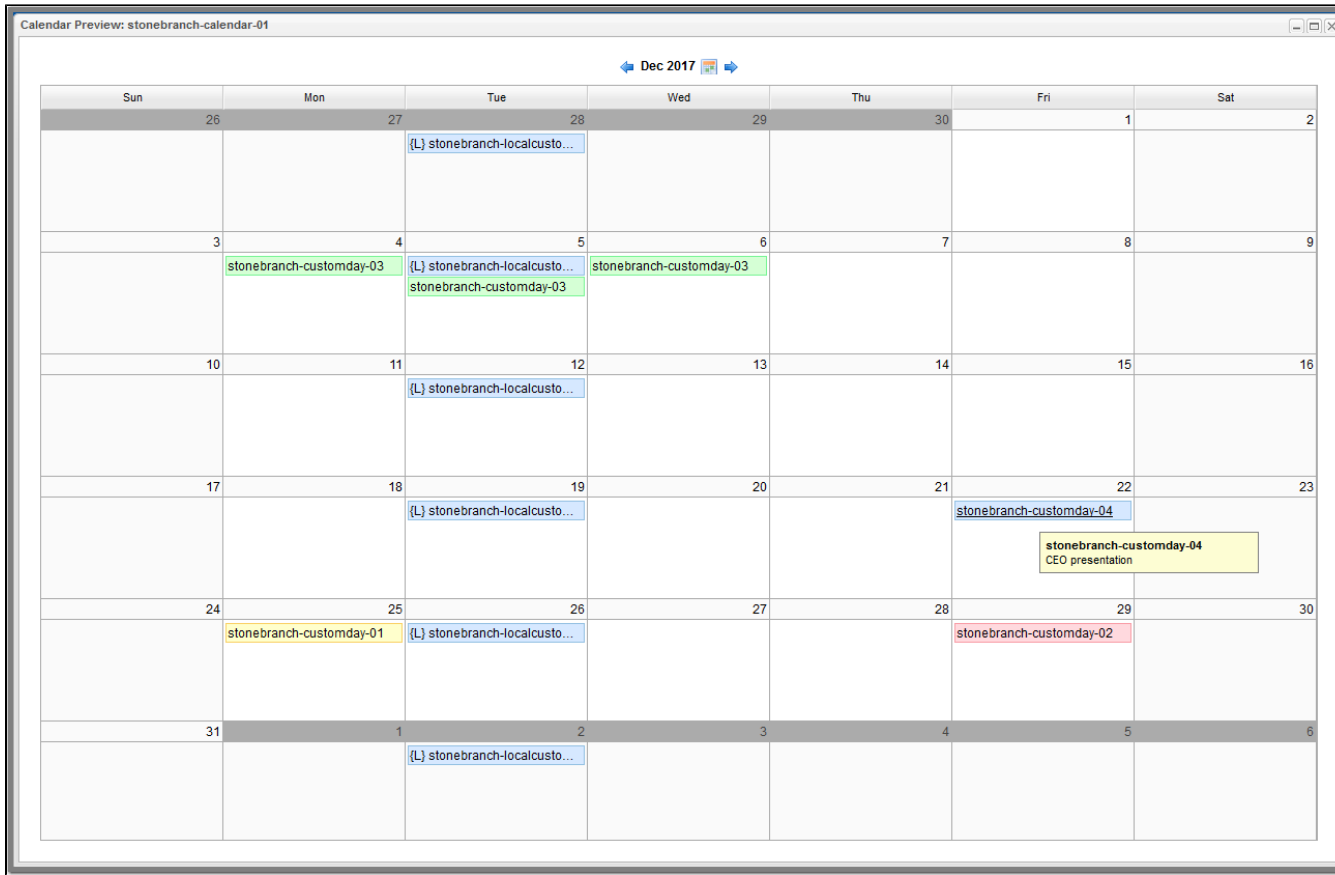
The Calendar Preview identifies, by color, the four categories of Custom Days:

Name	Color
Day	Custom Day name shaded in blue.
Holidays	Custom Day name shaded in yellow.
Business Days	Custom Day name shaded in red.
Period	Custom Day name shaded in green.

Local Custom Day names are preceded by {L} (if the Custom Day Local Indicator Enabled Universal Controller system property is set to true).

The current day is shaded in blue.

To see the description of a Custom Day in the Calendar Preview, hover your cursor over the Custom Day name.

To see Details of a Custom Day in the Calendar Preview, click the Custom Day name.

Copying Calendars

- Overview
- Copying One or More Calendars from a Calendars List
- Copying a Calendar from the Calendar Details
- Copy Permissions

Overview

You can make copies of all Universal Controller records, including calendars, using the standard method for Copying a Record: selecting **Insert** on the Action menu.

However, this method does not make copies of any records that are associated with the copied record. For calendars, **Insert** does not make copies of any Custom Days and Triggers that are associated with the calendar.

The Copy option allows you to make a complete copy of a calendar, including all of its associated records.

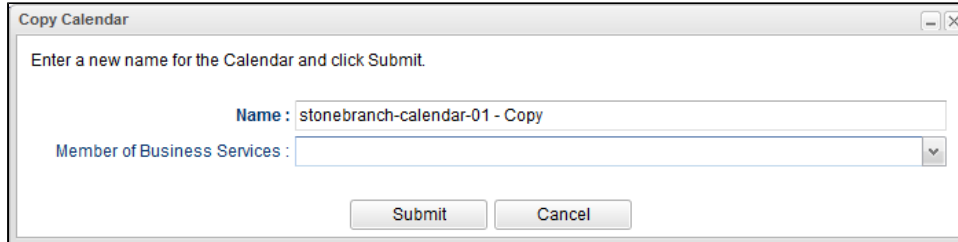## Copying One or More Calendars from a Calendars List

Step 1	From the Automation Center navigation pane, select **Other > Calendars**. The Calendars list displays.
Step 2	Locate the calendars(s) you want to copy (see Filtering).

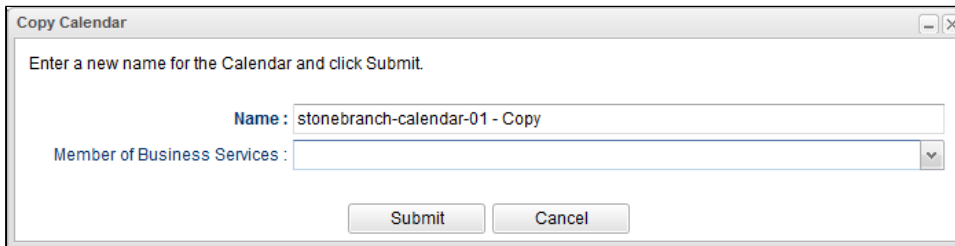| **Step 3**	Copy the calendar(s):
	Copy One Calendar
	1. Right-click the Calendar **Name** to display an Action menu.
	2. Click **Copy**. A Copy Calendar pop-up dialog displays.
	Copy Calendar
	Enter a new name for the Calendar and click Submit.
	Name : stonebranch-calendar-01 - Copy
	Member of Business Services :
	Submit Cancel
	3. Enter a new name for the calendar and, optionally, select any Business Services that you want the calendar assigned to.
	4. Click **Submit** to create a copy of the calendar.
	Copy Multiple Calendars
	1. Ctrl-Click the calendars you want to copy.
	2. Right-click any of the selected calendars to display an Action menu.
	3. Click **Copy**.
	4. On the Confirmation pop-up that displays, click **OK**. The copied calendars are added to the list, with **- Copy** added as a suffix to the Name for each calendar. If a calendar with that **- Copy** name already exists, another copy is not created.

Copying a Calendar from the Calendar Details

Step 1	Select a calendar from the Calendars list. The Calendar Details for that calendar displays.
Step 2	Either:
	• Click the **Copy** button.
	• Right-click in the Details to display the Action menu, and then click **Copy**.
	A Copy Calendar pop-up dialog displays.
	Copy Calendar
	Enter a new name for the Calendar and click Submit.
	Name : stonebranch-calendar-01 - Copy
	Member of Business Services :
	Submit Cancel
Step 3	Enter a new name for the calendar and, optionally, select any Business Services that you want the calendar assigned to.

Step 4	Click **Submit** to create a copy of the calendar.

Copy Permissions

To copy a Calendar, you must have both Read permission and Copy command permission for the Calendar you are copying, in addition to having Create permission for the copied Calendar.