SQL Sentry Response Rulesets

Last Modified on 06 December 2021

Response Rulesets control how often **Actions** are taken in response to **Conditions**. The default ruleset is **Notify Every Time**, meaning that the **Action** is taken every time the **Condition** is met. **Response Rulesets** allow for an extra level of configurability for certain notifications by allowing you to define additional criteria that must be met in order for the **Action** to be taken.

For example, you may receive false-positive **Database Offline/Online** messages throughout the day on servers/networks that are highly utilized. An example **Response Ruleset** for this scenario might specify that this **Condition** must be true for five minutes before an email is sent. Additionally, you can specify under which criteria subsequent actions for this same **Condition** occur.

Actions and their configured **Response Rulesets** have a hierarchical configuration. When you configure an **Action** with a **Response Ruleset** the **Action** and the **Action's Response Ruleset** are inherited by each object below that level. For a visual representation of how inheritance works within SQL Sentry, see the Alerting and Response System Hierarchy diagram.

> ℹ **Note:** **Response Rulesets** are a powerful tool that help adjust **Alerts**. **Response Rulesets** are available globally, meaning the same **Response Ruleset** can be applied to multiple **Conditions**. Any changes made to a **Response Ruleset** affect every **Condition** where the **Response Ruleset** is applied.

Windows are also available to help you adjust **Alerting** in your environment. Windows may be applied directly to any configured **Action** to control the time frame of when that **Action** is processed. Apply a **Window** in the **Response Ruleset** tab of any configured **Action**. For more information about configuring Windows, see the Schedules and Windows topic.

Ruleset Types

There are two ruleset types, **Count Based** and **Time Based.**

Ruleset Type	Description
Count Based	**Count Based** rulesets control: • How many times a **Condition** occurs within a specified time frame before **Actions** are taken. • How many times a **Condition** reoccurs before subsequent **Actions** are taken. • How long to continue taking **Action** when a **Condition** is occurring. For more information, see the **Response Ruleset Count Based** example.
Time Based	**Time Based** rulesets control: • How long a **Condition** exists before **Actions** are taken. • How much time elapses before subsequent **Actions** are taken. • How long to continue taking **Action** when a **Condition** is occurring. For more information, see the **Response Ruleset Time Based** example.

ℹ **Note:** Blocking Response Rulesets trigger based on the blocking chain (not the head block). Each block will have a head blocker that is assigned a unique SPID, and each SPID attached to the head blocker will have a unique SPID(s). A Blocking Response Ruleset will trigger once the requirements for the blocking chain (whether count based, or time based) are met.

Consider the following example:

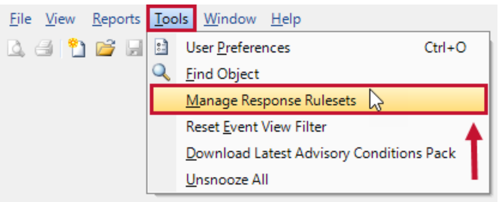
You have a count based blocking ruleset that notifies you of a blocking event if four blocks occur within 25 minutes.

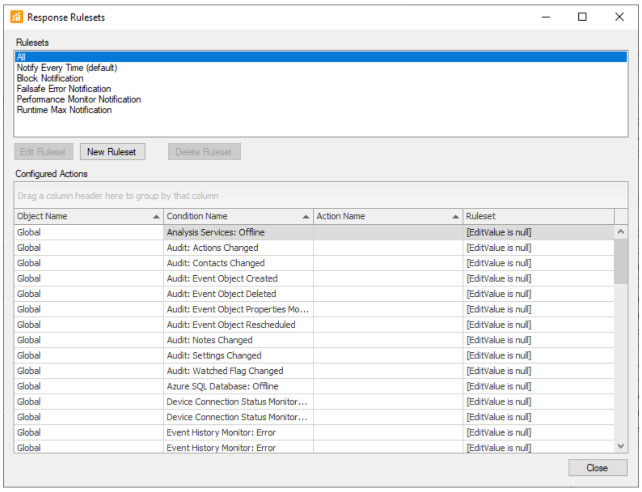
In one scenario , this ruleset would trigger if there was one blocking event SPID 123, that caused four blocks SPID 77, SPID 98, SPID 99, and SPID 103 within 25 minutes.

In a second scenario, this ruleset would not trigger if there were multiple blocking events: SPID 174 blocks SPID 99, then SPID 87 blocks SPID 65, SPID 275 blocks SPID 84, and SPID 88 blocks SPID 54. The blocking events in the second scenario were four separate events that occurred within 25 minutes, but they were not part of one single blocking chain, and would not trigger the blocking response ruleset.

Managing Rulesets

Response Rulesets are managed by selecting the **Tools** menu > **Manage Response Ruleset** command. Create, edit, and delete rulesets in this window. Assign rulesets to all **Actions** configured within your environment. Once a **Response Ruleset** has been defined, it can be associated with a **Condition**.



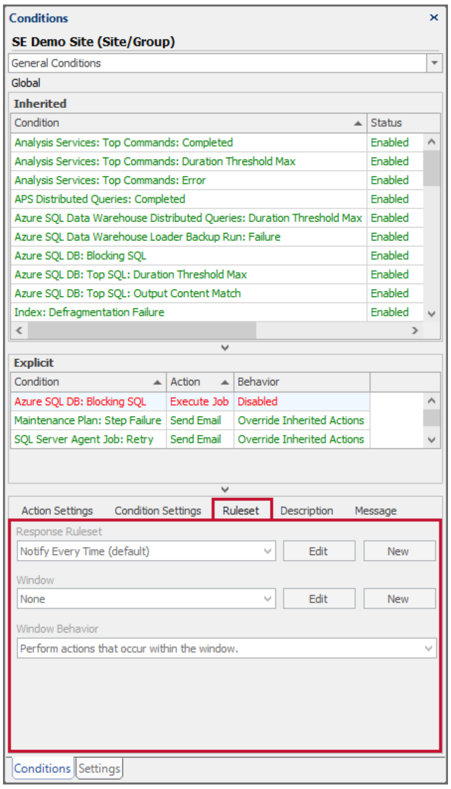


Rulesets

- All
- Notify Every Time (default)
- Block Notification
- Failsafe Error Notification
- Performance Monitor Notification
- Runtime Max Notification

Object Name	Condition Name	Action Name	Ruleset
Global	Analysis Services: Offline		[EditValue is null]
Global	Audit: Actions Changed		[EditValue is null]
Global	Audit: Contacts Changed		[EditValue is null]
Global	Audit: Event Object Created		[EditValue is null]
Global	Audit: Event Object Deleted		[EditValue is null]
Global	Audit: Event Object Properties Mo...		[EditValue is null]
Global	Audit: Event Object Rescheduled		[EditValue is null]
Global	Audit: Notes Changed		[EditValue is null]
Global	Audit: Settings Changed		[EditValue is null]
Global	Audit: Watched Flag Changed		[EditValue is null]
Global	Azure SQL Database: Offline		[EditValue is null]
Global	Device Connection Status Monitor...		[EditValue is null]
Global	Device Connection Status Monitor...		[EditValue is null]
Global	Event History Monitor: Error		[EditValue is null]
Global	Event History Monitor: Error		[EditValue is null]

Response Rulesets can also be managed for individual **Actions** from the **Response Ruleset** tab found within the **Conditions** pane **(View > Conditions)**.



Inherited

Condition	Status
Analysis Services: Top Commands: Completed	Enabled
Analysis Services: Top Commands: Duration Threshold Max	Enabled
Analysis Services: Top Commands: Error	Enabled
APS Distributed Queries: Completed	Enabled
Azure SQL Data Warehouse Distributed Queries: Duration Threshold Max	Enabled
Azure SQL Data Warehouse Loader Backup Run: Failure	Enabled
Azure SQL DB: Blocking SQL	Enabled
Azure SQL DB: Top SQL: Duration Threshold Max	Enabled
Azure SQL DB: Top SQL: Output Content Match	Enabled
Index: Defragmentation Failure	Enabled

Explicit

Condition	Action	Behavior
Azure SQL DB: Blocking SQL	Execute Job	Disabled
Maintenance Plan: Step Failure	Send Email	Override Inherited Actions
SQL Server Agent Job: Retry	Send Email	Override Inherited Actions

Response Ruleset: Notify Every Time (default)

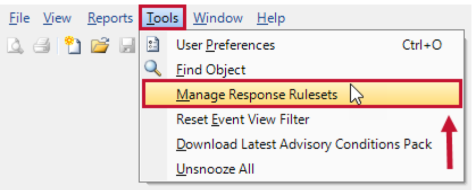
Window: None

Window Behavior: Perform actions that occur within the window.

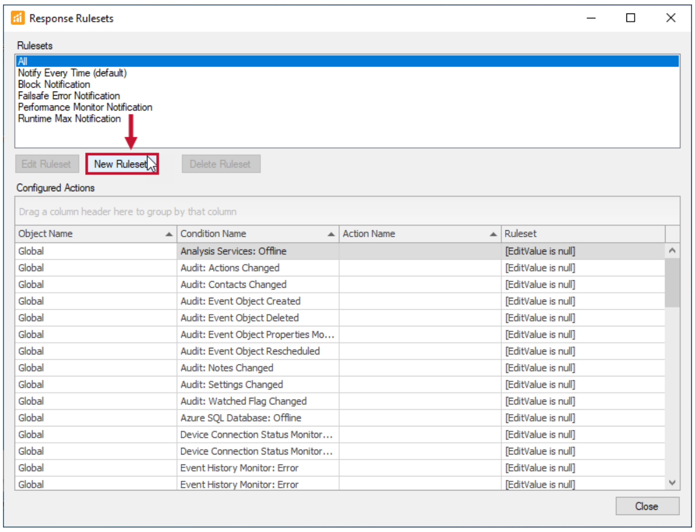
Creating a New Response Ruleset

Create a new **Response Ruleset** by completing the following:

1. Open the **Response Rulesets** window by selecting **Tools** > **Manage Response Ruleset**.



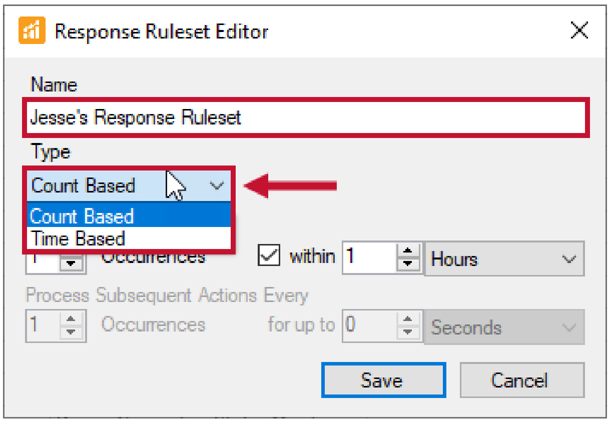
2. Select **New Ruleset** to open the **Response Ruleset Editor**.



All
Notify Every Time (default)
Block Notification
Failsafe Error Notification
Performance Monitor Notification
Runtime Max Notification

Object Name	Condition Name	Action Name	Ruleset
Global	Analysis Services: Offline		[EditValue is null]
Global	Audit: Actions Changed		[EditValue is null]
Global	Audit: Contacts Changed		[EditValue is null]
Global	Audit: Event Object Created		[EditValue is null]
Global	Audit: Event Object Deleted		[EditValue is null]
Global	Audit: Event Object Properties Mo…		[EditValue is null]
Global	Audit: Event Object Rescheduled		[EditValue is null]
Global	Audit: Notes Changed		[EditValue is null]
Global	Audit: Settings Changed		[EditValue is null]
Global	Audit: Watched Flag Changed		[EditValue is null]
Global	Azure SQL Database: Offline		[EditValue is null]
Global	Device Connection Status Monitor…		[EditValue is null]
Global	Device Connection Status Monitor…		[EditValue is null]
Global	Event History Monitor: Error		[EditValue is null]
Global	Event History Monitor: Error		[EditValue is null]

3. Enter a **name** for the **Response Ruleset**, and then select **Count based** or **Time based** from the **Ruleset Type** box.



Name
Jesse's Response Ruleset

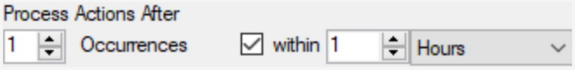
Type
Count Based
Count Based
Time Based

1 Occurrences ☑ within 1 Hours

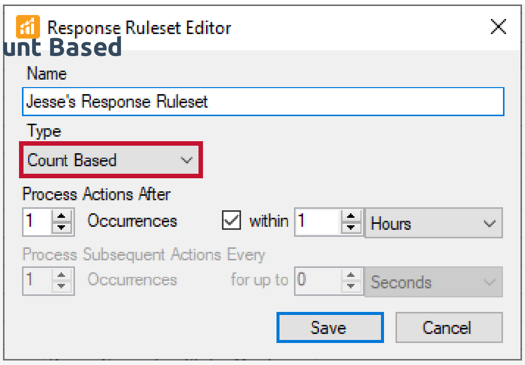
Process Subsequent Actions Every
1 Occurrences for up to 0 Seconds

Depending on the Ruleset type you're creating, the configuration options are as follows:

Ruleset Configuration Options

Count Based	**Configuration Options**
	 Process Actions After 1 Occurrences ☑ within 1 Hours **Process Actions After:** • Occurrences – number of times the event must occur prior to processing actions. • within (checked) – the window of time in which the events needs to occur. • within (not checked) – ignores time limit,

Count Based



Response Ruleset Editor

Name

Jesse's Response Ruleset

Type

Count Based

Process Actions After

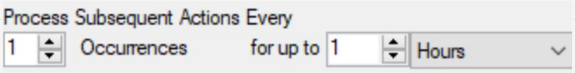
1 Occurrences ☑ within 1 Hours

Process Subsequent Actions Every

1 Occurrences for up to 0 Seconds

enables subsequent actions.

Configuration Options



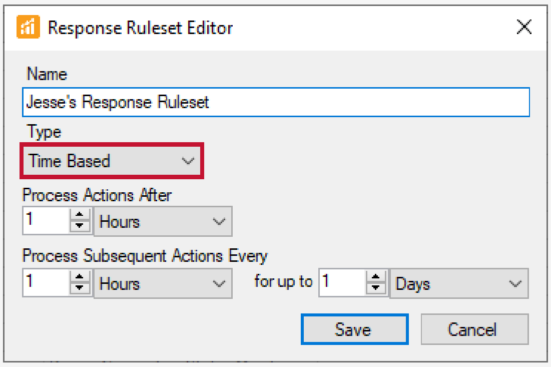
Process Subsequent Actions Every

1 Occurrences for up to 1 Hours

Process Subsequent Actions Every:

- Occurrences – number of times the event must occur prior to processing subsequent actions.
- for up to – how long to follow the subsequent actions setting before starting ruleset over.

Time Based



Response Ruleset Editor

Name

Jesse's Response Ruleset

Type

Time Based

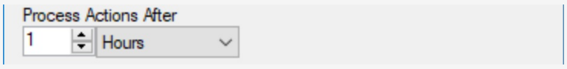
Process Actions After

1 Hours

Process Subsequent Actions Every

1 Hours for up to 1 Days

Configuration Options

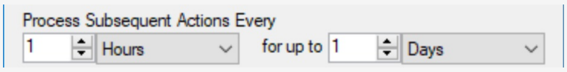


Process Actions After

1 Hours

Process Actions After:

- The amount of time a condition must exist prior to processing actions.



Process Subsequent Actions Every

1 Hours for up to 1 Days

Process Subsequent Actions Every:

- The amount of time a condition must continue to exist between processing actions.
- For up to – how long to follow the subsequent actions setting before starting ruleset over.

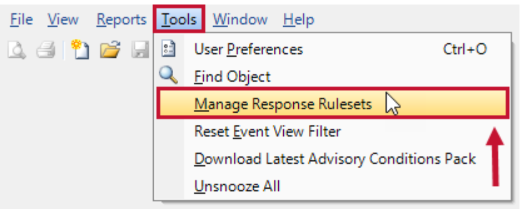
⚠ **Important:** Time-based rulesets are additive when used in conjunction with runtime threshold max settings. If the duration of the runtime threshold max alert is 5 minutes, and a ruleset is configured to process after 6 minutes, then the ruleset will not process until 11 minutes after the event (job, blocking, SQL Statement, etc.) began.

ℹ **Note:** Modifications to a **Response Ruleset** trigger an **Audit** Condition.

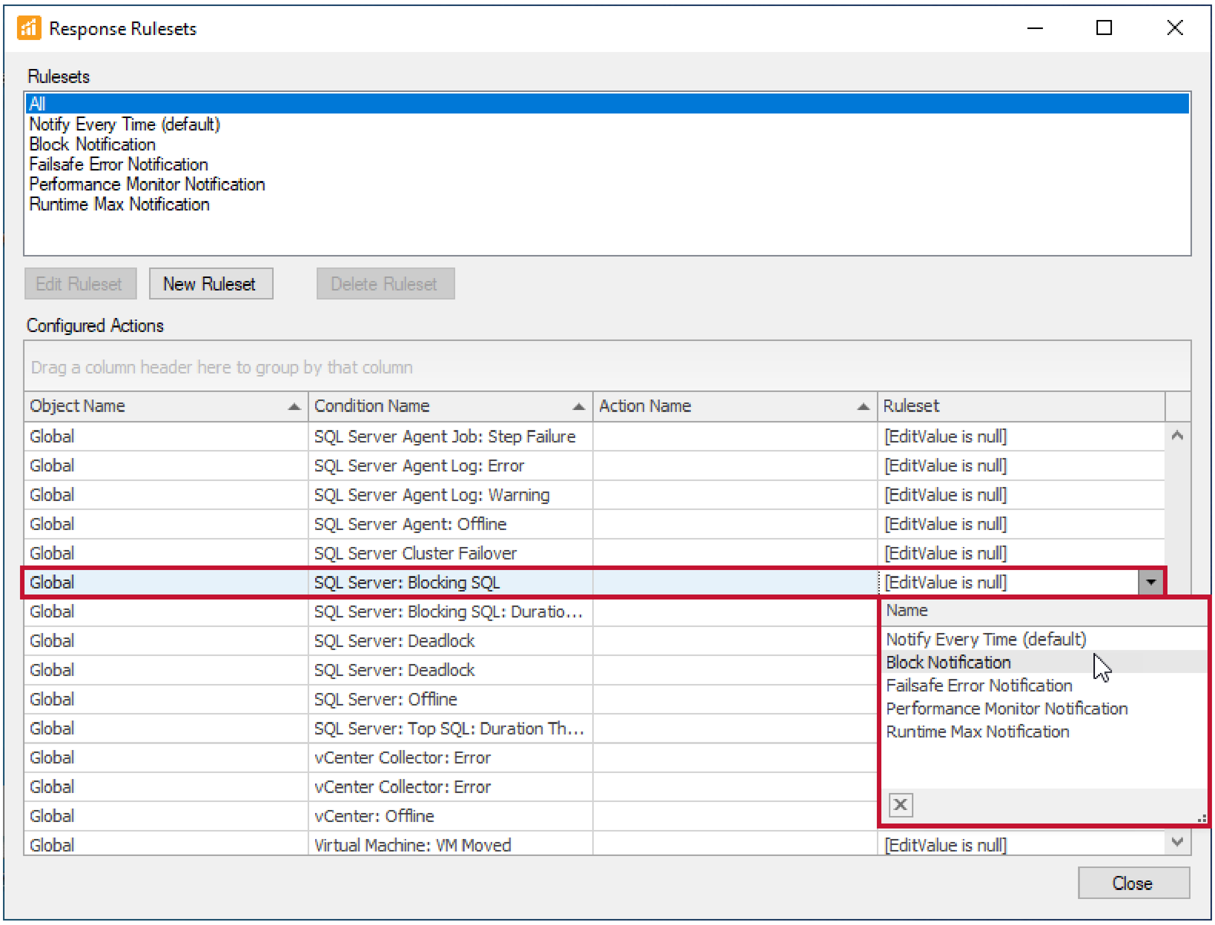
Assigning a Response Ruleset to an Action

Assign a **Response Ruleset** to an **Action** from within the **Manage Response Ruleset** dialogue by completing the following:

1. Open the **Manage Response Ruleset** dialogue (**Tools** > **Manage Response Ruleset**).

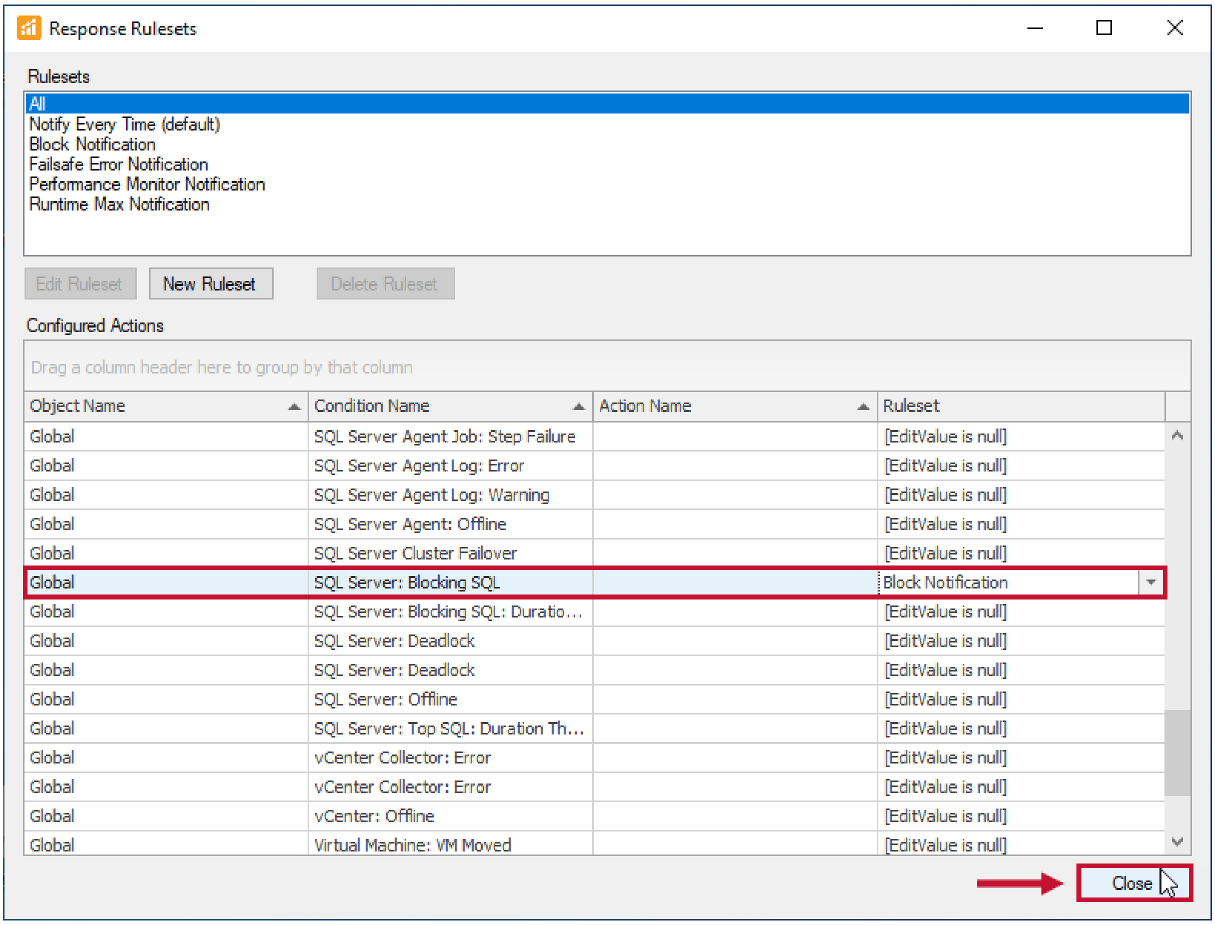


2. Select any **Action** found within the **Configured Actions** section, and then select the drop-down arrow in the **Ruleset** column to see **Response Rulesets** applicable for the **Action**.


Response Rulesets
Rulesets
All
Notify Every Time (default)
Block Notification
Failsafe Error Notification
Performance Monitor Notification
Runtime Max Notification
Edit Ruleset
New Ruleset
Delete Ruleset
Configured Actions
Drag a column header here to group by that column
Name
Notify Every Time (default)
Block Notification
Failsafe Error Notification
Performance Monitor Notification
Runtime Max Notification
Close

Object Name	Condition Name	Action Name	Ruleset
Global	SQL Server Agent Job: Step Failure		[EditValue is null]
Global	SQL Server Agent Log: Error		[EditValue is null]
Global	SQL Server Agent Log: Warning		[EditValue is null]
Global	SQL Server Agent: Offline		[EditValue is null]
Global	SQL Server Cluster Failover		[EditValue is null]
Global	SQL Server: Blocking SQL		[EditValue is null]
Global	SQL Server: Blocking SQL: Duratio…		
Global	SQL Server: Deadlock		
Global	SQL Server: Deadlock		
Global	SQL Server: Offline		
Global	SQL Server: Top SQL: Duration Th…		
Global	vCenter Collector: Error		
Global	vCenter Collector: Error		
Global	vCenter: Offline		
Global	Virtual Machine: VM Moved		[EditValue is null]

3. Select the **Response Ruleset** that you'd like to apply, and then select **Close** to save your selection.



Rulesets

All
Notify Every Time (default)
Block Notification
Failsafe Error Notification
Performance Monitor Notification
Runtime Max Notification

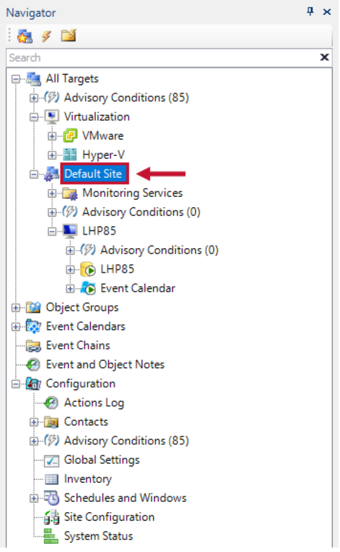
Configured Actions

Drag a column header here to group by that column

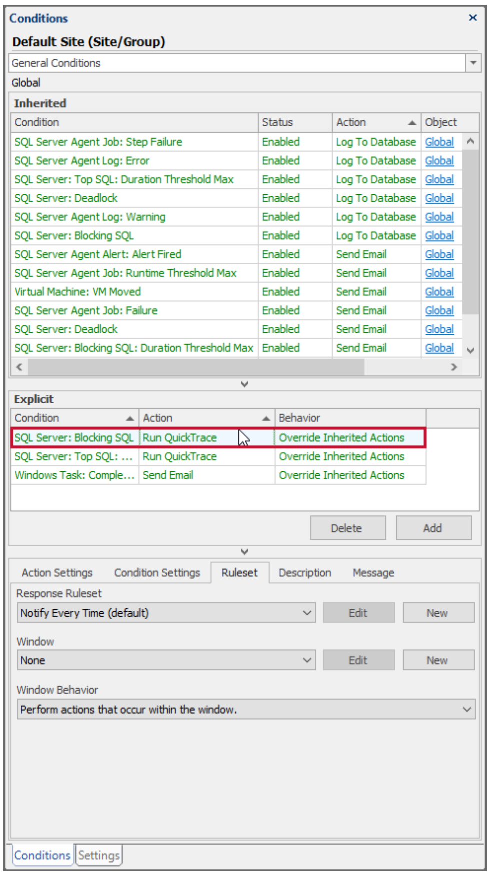
Object Name	Condition Name	Action Name	Ruleset
Global	SQL Server Agent Job: Step Failure		[EditValue is null]
Global	SQL Server Agent Log: Error		[EditValue is null]
Global	SQL Server Agent Log: Warning		[EditValue is null]
Global	SQL Server Agent: Offline		[EditValue is null]
Global	SQL Server Cluster Failover		[EditValue is null]
Global	SQL Server: Blocking SQL		Block Notification
Global	SQL Server: Blocking SQL: Duratio…		[EditValue is null]
Global	SQL Server: Deadlock		[EditValue is null]
Global	SQL Server: Deadlock		[EditValue is null]
Global	SQL Server: Offline		[EditValue is null]
Global	SQL Server: Top SQL: Duration Th…		[EditValue is null]
Global	vCenter Collector: Error		[EditValue is null]
Global	vCenter Collector: Error		[EditValue is null]
Global	vCenter: Offline		[EditValue is null]
Global	Virtual Machine: VM Moved		[EditValue is null]

You can also assign a **Response Ruleset** to an **Action** from the **Response Ruleset tab** found within the **Conditions** pane (**View** > **Conditions**).

1. In the **Navigator** pane (**View** > **Navigator**) select the node where you'd like to configure the **Action**.



2. Select the **Action** that you'd like to apply a ruleset for in the **Conditions** pane (**View** > **General/Failsafe/Audit**), and then select **Rulesets** tab found directly beneath the **Action**.



Conditions

Default Site (Site/Group)

General Conditions

Global

Inherited

Condition	Status	Action	Object
SQL Server Agent Job: Step Failure	Enabled	Log To Database	Global
SQL Server Agent Log: Error	Enabled	Log To Database	Global
SQL Server: Top SQL: Duration Threshold Max	Enabled	Log To Database	Global
SQL Server: Deadlock	Enabled	Log To Database	Global
SQL Server Agent Log: Warning	Enabled	Log To Database	Global
SQL Server: Blocking SQL	Enabled	Log To Database	Global
SQL Server Agent Alert: Alert Fired	Enabled	Send Email	Global
SQL Server Agent Job: Runtime Threshold Max	Enabled	Send Email	Global
Virtual Machine: VM Moved	Enabled	Send Email	Global
SQL Server Agent Job: Failure	Enabled	Send Email	Global
SQL Server: Deadlock	Enabled	Send Email	Global
SQL Server: Blocking SQL: Duration Threshold Max	Enabled	Send Email	Global

Explicit

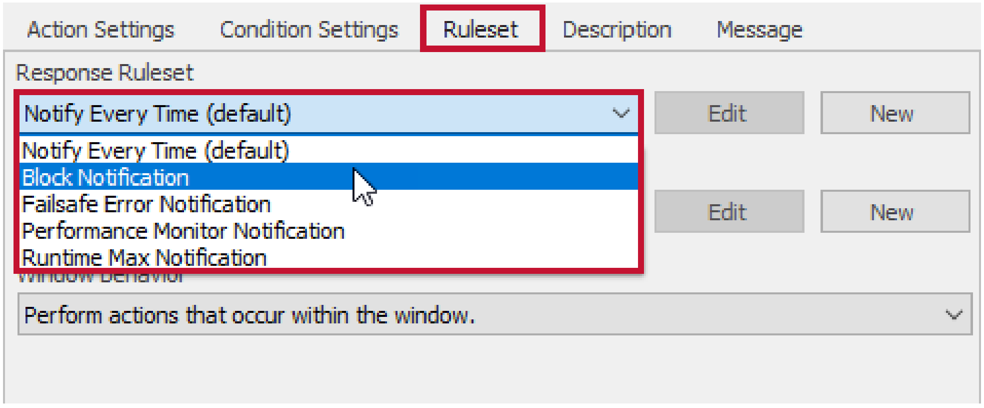
Condition	Action	Behavior
SQL Server: Blocking SQL	Run QuickTrace	Override Inherited Actions
SQL Server: Top SQL: …	Run QuickTrace	Override Inherited Actions
Windows Task: Comple…	Send Email	Override Inherited Actions

Response Ruleset: Notify Every Time (default)

Window: None

Window Behavior: Perform actions that occur within the window.

3. Select the **Response Ruleset** that you'd like to apply.



Action Settings
Condition Settings
Ruleset
Description
Message
Response Ruleset
Notify Every Time (default)
Notify Every Time (default)
Block Notification
Failsafe Error Notification
Performance Monitor Notification
Runtime Max Notification
Edit
New
Edit
New
Window Behavior
Perform actions that occur within the window.

ℹ **Note:** The following are the best practices for using **Response Rulesets:**

- Name global rulesets by their behavior.
- Name custom rulesets by the object and event/condition they apply to.
- Use count based rulesets for event driven rules.
- Use time based rulesets for condition driven rules.

Response Ruleset Examples

Response Rulesets control how often **Actions** are taken in response to **Conditions**. The default ruleset is

Notify Every Time, meaning that the **Action** is taken every time the **Condition** is met. **Response Rulesets** allow for an extra level of configurability for certain notifications by allowing you to define additional criteria that must be met in order for the **Action** to be taken. For a general overview, see the Response Ruleset topic.

Count Based Example

As a reminder **Count Based** rulesets control:

- How many times a **Condition** occurs within a specified time frame before **Actions** are taken.
- How many times a **Condition** reoccurs before subsequent Actions are taken.
- How long to continue taking **Action** when a **Condition** is occurring.

This **Count Based** ruleset example deals with a SQL Server Agent job that often fails.

For this example assume the following:

You have a Send Email action configured at the instance level for the SQL Server Agent Job: Failure Condition. There's a SQL Server Agent Job **FrequentJob**, that runs every minute. The occasional failure is expected and can be disregarded, but if this job begins failing repeatedly it usually indicates a problem.

To prevent getting an alert on every failure, set a **Response Ruleset** to limit the processing of the **Send Email** action for the **SQL Server Agent Job: Failure Condition** so that an email is only sent after the job failed multiple times within a specified time frame. For the example we configure a **Count Based Response Ruleset** that requires the job to fail three times within five minutes.

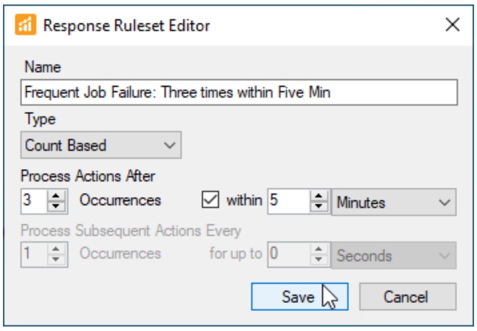
To accomplish this you need to apply a **Count Based Response Ruleset** at the job level (**FrequentJob).** Apply this **Response Ruleset** at the individual job level as opposed to the instance level to avoid suppressing email notifications for the rest of your Agent Jobs belonging to that instance.

Configure a **Send Email** action for the **SQL Server Agent Job: Failure Condition** for the Agent Job **FrequentJob.**

1. Select the **FrequentJob** node in the **Navigator** Pane.
2. Open the **General Actions** section in the **Conditions** pane (**View** > **Conditions**).
3. Select **Add** found in the **Explicit** section of the **General Actions** section. This opens the **Select Action** window.
4. Expand the **SQL Server Agent Job: Failure Condition**. Select the **Send Email** action from the checkbox. Select **OK** to add the configured action. Be sure to specify a **Selected Target** in the **Action Settings** tab.

Next, apply a **Response Ruleset** to the configured **Action**.

1. Select the configured email action in the **Explicit** section of the **Conditions** pane, and then change the behavior to **Override Inherited Action**.
2. Select the **Response Rulesets** tab found directly beneath the **Explicit** section of the **Conditions** pane. The default **Response Ruleset**, **Notify Every Time** is applied. Select **New** to open the **Response Ruleset Editor**.
3. Give the **Response Ruleset** a name.



Response Ruleset Editor

Name

Frequent Job Failure: Three times within Five Min

Type

Count Based

Process Actions After

3 Occurrences ☑ within 5 Minutes

Process Subsequent Actions Every

1 Occurrences for up to 0 Seconds

4. Fill in the information as specified above and select **Save** to apply the newly created **Response Ruleset** to the configured **Action**.

Now that the **Send Email** action configured for the **SQL Server Agent Job: Failure Condition** has the above **Response Ruleset** applied, an email only sends alerting you that the **FrequentJob** failed, if it does so three times within five minutes.

Only the SQL Agent Job **FrequentJob** is impacted by this change. Other Agent Jobs are still subject to the **Send Email** action configured at the instance level that has the default **Response Ruleset** of **Notify Every Time**.

Note: Consider the following:

- With this ruleset in place on the **Send Email** action, you could still have the failure execute the **Log To Database** action using the default ruleset. This way every failure is recorded.
- You could also apply an *additional* **Send Email** action for the **SQL Server Agent Job: Failure Condition** with a different ruleset. This could be useful for escalation purposes or if a different team member prefers to be notified every time the job fails.

Time Based Example

Time Based rulesets control:

- How long a **Condition** exists before **Actions** are taken.
- How much time elapses before subsequent **Actions** are taken.
- How long to continue taking **Action** when a **Condition** is occurring.

This **Time Based** ruleset example deals with **Instance Offline/Online Alerts**.

For this example assume the following:

You have a **Send Email** action configured at the **Global level** for the **SQL Server: Offline Condition**.

You have a site, **TransientSite** in your environment that contains several instances. You're being alerted by email that these instances are going offline and online, but when you check these instances they seem to be false notifications. This can happen if there's transient network issues and the monitoring service is unable to connect to the monitored servers. If these problems are truly transient, you may not necessarily want to be notified every time this happens.

To prevent getting an alert for every occurrence of these transient network issues set a **Response Ruleset** to limit the processing of the **Send Email** action for the **SQL Server Instance: Offline Condition**. This **Response Ruleset** adds additional criteria to the processing of the **Send Email** action so that an email is only sent after the instance is detected to be in an offline state for a specific period of time.

For this example we do this by:

1. Configuring a **Time Based Response Ruleset** that requires the **SQL Server: Offline Condition** to be true for five minutes.
2. Disabling the **SQL Server Instance: Online Condition**.

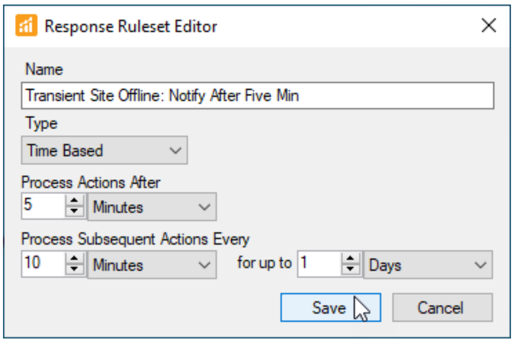
To accomplish this apply a **Time Based Ruleset** at the site level for the **TransientSite**. Apply this **Response Ruleset** at the site level as opposed to the global level to avoid suppressing email notifications about the rest of your instances going offline and online.

Configure a **Send Email** action for the **SQL Server Instance: Offline Condition** at the **TransientSite** level.

1. Select the **TransientSite** node in the **Navigator** pane (**View** > **Navigator**).
2. Open the **Failsafe Actions** section in the **Conditions** pane (**View** > **Conditions**).
3. Select **Add** found in the **Explicit** section of the **Failsafe Actions** section. This opens the **Select Action** window.
4. Expand the **SQL Server Instance: Offline Condition**. Select the **Send Email** action from the checkbox. Select **OK** to add the configured action. Be sure to specify a **Selected Target** in the **Actions Settings** tab.

Next apply a **Response Ruleset** to the configured **Action**.

1. Select the configured email action in the **Explicit** section of the **Conditions** pane, and then change the behavior to **Override Inherited Action**.
2. Select the **Response Ruleset** tab found directly beneath the **Explicit** section of the **Conditions** pane. The default **Response Ruleset**, **Notify Every Time** is applied. Select **New** to open the **Response Ruleset Editor**.
3. Give the **Response Ruleset** a name.



Response Ruleset Editor

Name: Transient Site Offline: Notify After Five Min

Type: Time Based

Process Actions After: 5 Minutes

Process Subsequent Actions Every: 10 Minutes for up to 1 Days

4. Fill in the information as specified above and select **Save** to apply the newly created **Response Ruleset** to the configured **Action**.

Now that the **Send Email** action configured for the **SQL Server Instance: Offline Condition** has the above

Response Ruleset applied, an email only be sends alerting you that one of the instances belonging to the **TransientSite** is offline, if it's detected to be in that state for longer than five minutes. You receive an additional email every 10 minutes for up to one day as long as the instance remains offline.

Next, disable the **Send Email** action for the **SQL Server Instance: Online Condition** at the **TransientSite** level. This stops any SQL Server online email notifications. With the above **Response Ruleset** applied, once you stop receiving emails for the **SQL Server Instance: Offline Condition** the server is online again.

To disable the Send Email action for the **SQL Server Instance: Online Condition** at the **TransientSite** level.

1. Select the **TransientSite** node in the **Navigator** pane (**View** > **Navigator**).
2. Open the **Failsafe Actions** section in the **Conditions** pane (**View** > **Conditions**).
3. Expand the **SQL Server Instance: Online Condition**. Select the **Send Email** action from the checkbox. Select **OK** to add the action.
4. Select the configured email action in the **Explicit** section of the **Conditions** pane. In the **Behavior** column select the drop down box and choose the **Disabled** behavior. For more about action behaviors, see the Actions topic.

Note: Consider the following:

- You may also want to follow the same procedures for the **SQL Server Agent: Offline/Online** conditions, by applying the same **Response Ruleset** for the **Offline** condition and disabling the **Online** condition.
- By default all **Failsafe** conditions are configured with a **Log To Database** action, so there's always a record of each time the **SQL Server Instance: Offline Condition** is met if you need to review it.
- You could also apply an additional **Send Email** action for the various **Offline/Online** conditions with a different **Response Ruleset.** This could be used for escalation purposes in the event of an long term server outage.