Manage alerts and alarms

StorageGRID

NetApp
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Manage alerts and alarms

Manage alerts and alarms: Overview

The StorageGRID alert system is designed to inform you about operational issues that require your attention. The legacy alarm system is deprecated.

Alert system

The alert system is designed to be your primary tool for monitoring any issues that might occur in your StorageGRID system. The alert system provides an easy-to-use interface for detecting, evaluating, and resolving issues.

Alerts are triggered at specific severity levels when alert rule conditions evaluate as true. When an alert is triggered, the following actions occur:

- An alert severity icon is shown on the Dashboard in the Grid Manager, and the count of Current Alerts is incremented.
- The alert is shown on the **NODES** summary page and on the **NODES** > ***node*** > **Overview** tab.
- An email notification is sent, assuming you have configured an SMTP server and provided email addresses for the recipients.
- An Simple Network Management Protocol (SNMP) notification is sent, assuming you have configured the StorageGRID SNMP agent.

Legacy alarm system

Like alerts, alarms are triggered at specific severity levels when attributes reach defined threshold values. However, unlike alerts, many alarms are triggered for events that you can safely ignore, which might result in an excessive number of email or SNMP notifications.

> The alarm system is deprecated and will be removed in a future release. If you are still using legacy alarms, you should fully transition to the alert system as soon as possible.

When an alarm is triggered, the following actions occur:

- The alarm appears on the **SUPPORT** > **Alarms (legacy)** > **Current alarms** page.
- An email notification is sent, assuming you have configured an SMTP server and configured one or more mailing lists.
- An SNMP notification might be sent, assuming you have configured the StorageGRID SNMP agent. (SNMP notifications are not sent for all alarms or alarm severities.)

Compare alerts and alarms

There are a number of similarities between the alert system and the legacy alarm system, but the alert system offers significant benefits and is easier to use.

Refer to the following table to learn how to perform similar operations.

	Alerts	Alarms (legacy system)
How do I see which alerts or alarms are active?	• Select the **Current alerts** link on the Dashboard. • Select the alert on the **NODES** > **Overview** page. • Select **ALERTS** > **Current**. View current alerts	Select **SUPPORT** > **Alarms (legacy)** > **Current alarms**. Manage alarms (legacy system)
What causes an alert or an alarm to be triggered?	Alerts are triggered when a Prometheus expression in an alert rule evaluates as true for the specific trigger condition and duration. View alert rules	Alarms are triggered when a StorageGRID attribute reaches a threshold value. Manage alarms (legacy system)
If an alert or alarm is triggered, how do I resolve the underlying problem?	The recommended actions for an alert are included in email notifications and are available from the Alerts pages in the Grid Manager. As required, additional information is provided in the StorageGRID documentation. Alerts reference	You can learn about an alarm by selecting the attribute name, or you can search for an alarm code in the StorageGRID documentation. Alarms reference (legacy system)
Where can I see a list of alerts or alarms that have been resolved?	Select **ALERTS** > **Resolved**. View resolved alerts	Select **SUPPORT** > **Alarms (legacy)** > **Historical alarms**. Manage alarms (legacy system)
Where do I manage the settings?	Select **ALERTS** > **Rules**. Manage alerts	Select **SUPPORT**. Then, use the options in the **Alarms (legacy)** section of the menu. Manage alarms (legacy system)

	Alerts	Alarms (legacy system)
What user group permissions do I need?	• Anyone who can sign in to the Grid Manager can view current and resolved alerts. • You must have the Manage Alerts permission to manage silences, alert notifications, and alert rules. Administer StorageGRID	• Anyone who can sign in to the Grid Manager can view legacy alarms. • You must have the Acknowledge Alarms permission to acknowledge alarms. • You must have both the Grid Topology Page Configuration and Other Grid Configuration permissions to manage global alarms and email notifications. Administer StorageGRID
How do I manage email notifications?	Select **ALERTS** > **Email setup**. **Note:** Because alarms and alerts are independent systems, the email setup used for alarm and AutoSupport notifications is not used for alert notifications. However, you can use the same mail server for all notifications. Set up email notifications for alerts	Select **SUPPORT** > **Alarms (legacy)** > **Legacy email setup**. Manage alarms (legacy system)
How do I manage SNMP notifications?	Select **CONFIGURATION** > **Monitoring** > **SNMP agent**. Use SNMP monitoring	Select **CONFIGURATION** > **Monitoring** > **SNMP agent**. Use SNMP monitoring **Note**: SNMP notifications are not sent for every alarm or alarm severity. Alarms that generate SNMP notifications (legacy system)
How do I control who receives notifications?	1. Select **ALERTS** > **Email setup**. 2. In the **Recipients** section, enter an email address for each email list or person who should receive an email when an alert occurs. Set up email notifications for alerts	1. Select **SUPPORT** > **Alarms (legacy)** > **Legacy email setup**. 2. Creating a mailing list. 3. Select **Notifications**. 4. Select the mailing list. Manage alarms (legacy system)

	Alerts	Alarms (legacy system)
Which Admin Nodes send notifications?	A single Admin Node (the “preferred sender”). Administer StorageGRID	A single Admin Node (the “preferred sender”). Administer StorageGRID
How do I suppress some notifications?	1. Select **ALERTS** > **Silences**. 2. Select the alert rule you want to silence. 3. Specify a duration for the silence. 4. Select the severity of alert you want to silence. 5. Select to apply the silence to the entire grid, a single site, or a single node. **Note**: If you have enabled the SNMP agent, silences also suppress SNMP traps and informs. Silence alert notifications	1. Select **SUPPORT** > **Alarms (legacy)** > **Legacy email setup**. 2. Select **Notifications**. 3. Select a mailing list, and select **Suppress**. Manage alarms (legacy system)
How do I suppress all notifications?	Select **ALERTS** > **Silences**.Then, select **All rules**. **Note**: If you have enabled the SNMP agent, silences also suppress SNMP traps and informs. Silence alert notifications	1. Select **CONFIGURATION** > **System** > **Display options**. 2. Select the **Notification Suppress All** check box. **Note**: Suppressing email notifications system wide also suppresses event-triggered AutoSupport emails. Manage alarms (legacy system)
How do I customize the conditions and triggers?	1. Select **ALERTS** > **Rules**. 2. Select a default rule to edit, or select **Create custom rule**. Edit alert rules Create custom alert rules	1. Select **SUPPORT** > **Alarms (legacy)** > **Global alarms**. 2. Create a Global Custom alarm to override a Default alarm or to monitor an attribute that does not have a Default alarm. Manage alarms (legacy system)

	Alerts	Alarms (legacy system)
How do I disable an individual alert or alarm?	1. Select **ALERTS** > **Rules**. 2. Select the rule, and select **Edit rule**. 3. Unselect the **Enabled** check box. Disable alert rules	1. Select **SUPPORT** > **Alarms (legacy)** > **Global alarms**. 2. Select the rule, and select the Edit icon. 3. Unselect the **Enabled** check box. Manage alarms (legacy system)

Manage alerts

Manage alerts: overview

Alerts allow you to monitor various events and conditions within your StorageGRID system. You can manage alerts by creating custom alerts, editing or disabling the default alerts, setting up email notifications for alerts, and silencing alert notifications.

About StorageGRID alerts

The alert system provides an easy-to-use interface for detecting, evaluating, and resolving the issues that can occur during StorageGRID operation.

- The alert system focuses on actionable problems in the system. Alerts are triggered for events that require your immediate attention, not for events that can safely be ignored.
- The Current Alerts page provides a user-friendly interface for viewing current problems. You can sort the listing by individual alerts and alert groups. For example, you might want to sort all alerts by node/site to see which alerts are affecting a specific node. Or, you might want to sort the alerts in a group by time triggered to find the most recent instance of a specific alert.
- The Resolved Alerts page provides similar information as on the Current Alerts page, but it allows you to search and view a history of the alerts that have been resolved, including when the alert was triggered and when it was resolved.
- Multiple alerts of the same type are grouped into one email to reduce the number of notifications. In addition, multiple alerts of the same type are shown as a group on the Alerts page. You can expand and collapse alert groups to show or hide the individual alerts. For example, if several nodes report the **Unable to communicate with node** alert at about the same time, only one email is sent and the alert is shown as a group on the Alerts page.
- Alerts use intuitive names and descriptions to help you quickly understand the problem. Alert notifications include details about the node and site affected, the alert severity, the time when the alert rule was triggered, and the current value of metrics related to the alert.
- Alert emails notifications and the alert listings on the Current Alerts and Resolved Alerts pages provide recommended actions for resolving an alert. These recommended actions often include direct links to the StorageGRID documentation center to make it easier to find and access more detailed troubleshooting procedures.
- If you need to temporarily suppress the notifications for an alert at one or more severity levels, you can easily silence a specific alert rule for a specified duration and for the entire grid, a single site, or a single node. You can also silence all alert rules, for example, during a planned maintenance procedure such as a

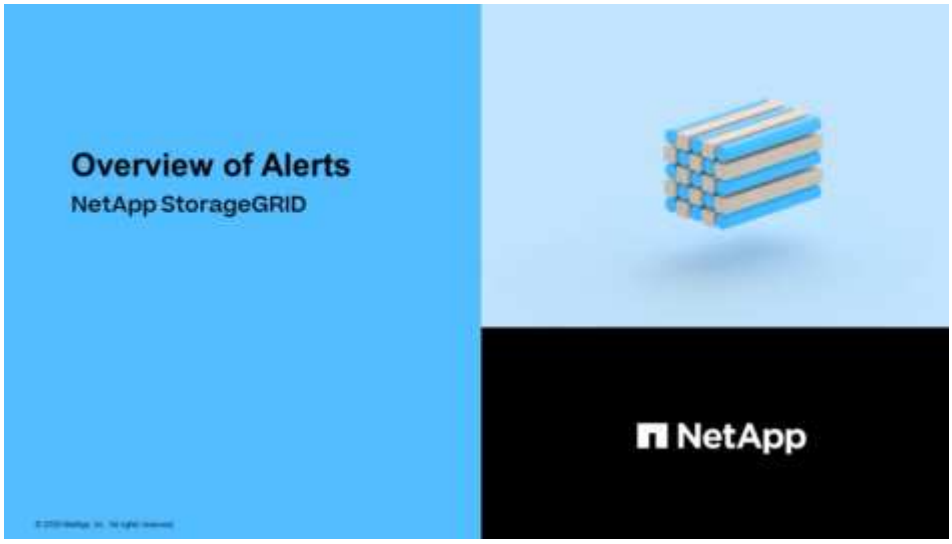
software upgrade.

- You can edit the default alert rules as required. You can disable an alert rule completely, or change its trigger conditions and duration.
- You can create custom alert rules to target the specific conditions that are relevant to your situation and to provide your own recommended actions. To define the conditions for a custom alert, you create expressions using the Prometheus metrics available from the Metrics section of the Grid Management API.

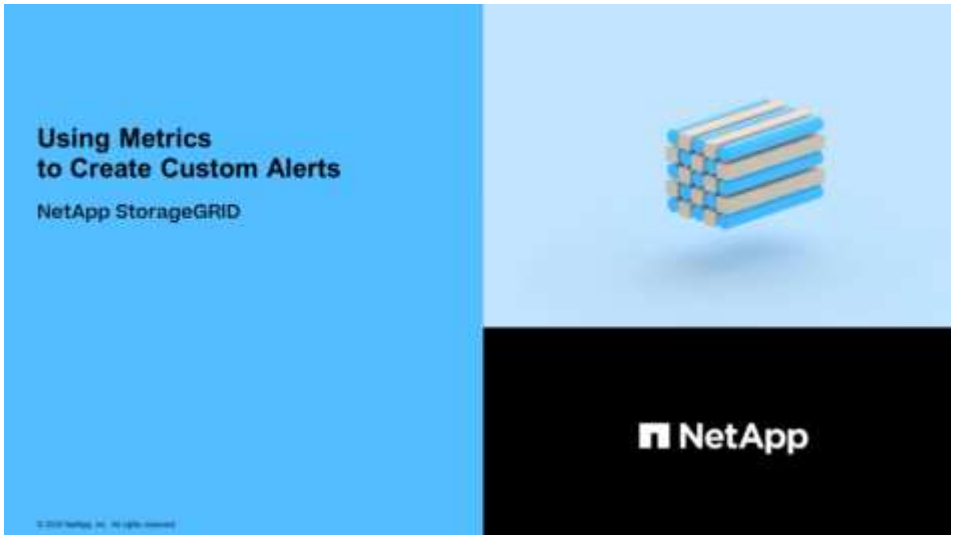
Learn more

To learn more, review these videos:

- Video: Overview of Alerts



- Video: Using Metrics to Create Custom Alerts



View alert rules

Alert rules define the conditions that trigger specific alerts. StorageGRID includes a set of default alert rules, which you can use as is or modify, or you can create custom alert rules.

You can view the list of all default and custom alert rules to learn which conditions will trigger each alert and to see whether any alerts are disabled.

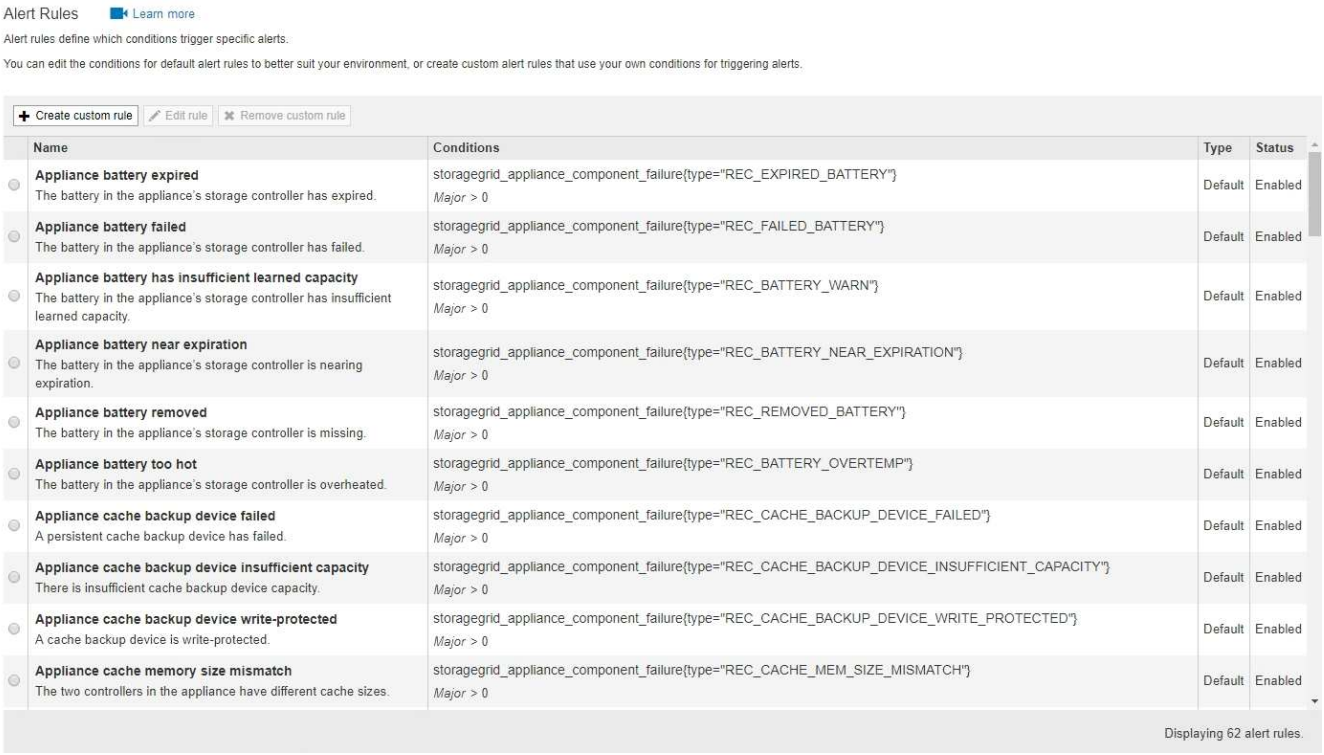
What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have the Manage Alerts or Root Access permission.
- Optionally, you have watched the video: Video: Overview of Alerts

Steps

1. Select **ALERTS** > **Rules**.

   The Alert Rules page appears.



Alert Rules Learn more

Alert rules define which conditions trigger specific alerts.

You can edit the conditions for default alert rules to better suit your environment, or create custom alert rules that use your own conditions for triggering alerts.

Create custom rule | Edit rule | Remove custom rule

Name	Conditions	Type	Status
Appliance battery expired The battery in the appliance's storage controller has expired.	storagegrid_appliance_component_failure{type="REC_EXPIRED_BATTERY"} *Major* > 0	Default	Enabled
Appliance battery failed The battery in the appliance's storage controller has failed.	storagegrid_appliance_component_failure{type="REC_FAILED_BATTERY"} *Major* > 0	Default	Enabled
Appliance battery has insufficient learned capacity The battery in the appliance's storage controller has insufficient learned capacity.	storagegrid_appliance_component_failure{type="REC_BATTERY_WARN"} *Major* > 0	Default	Enabled
Appliance battery near expiration The battery in the appliance's storage controller is nearing expiration.	storagegrid_appliance_component_failure{type="REC_BATTERY_NEAR_EXPIRATION"} *Major* > 0	Default	Enabled
Appliance battery removed The battery in the appliance's storage controller is missing.	storagegrid_appliance_component_failure{type="REC_REMOVED_BATTERY"} *Major* > 0	Default	Enabled
Appliance battery too hot The battery in the appliance's storage controller is overheated.	storagegrid_appliance_component_failure{type="REC_BATTERY_OVERTEMP"} *Major* > 0	Default	Enabled
Appliance cache backup device failed A persistent cache backup device has failed.	storagegrid_appliance_component_failure{type="REC_CACHE_BACKUP_DEVICE_FAILED"} *Major* > 0	Default	Enabled
Appliance cache backup device insufficient capacity There is insufficient cache backup device capacity.	storagegrid_appliance_component_failure{type="REC_CACHE_BACKUP_DEVICE_INSUFFICIENT_CAPACITY"} *Major* > 0	Default	Enabled
Appliance cache backup device write-protected A cache backup device is write-protected.	storagegrid_appliance_component_failure{type="REC_CACHE_BACKUP_DEVICE_WRITE_PROTECTED"} *Major* > 0	Default	Enabled
Appliance cache memory size mismatch The two controllers in the appliance have different cache sizes.	storagegrid_appliance_component_failure{type="REC_CACHE_MEM_SIZE_MISMATCH"} *Major* > 0	Default	Enabled

Displaying 62 alert rules.

2. Review the information in the alert rules table:

Column header	Description
Name	The unique name and description of the alert rule. Custom alert rules are listed first, followed by default alert rules. The alert rule name is the subject for email notifications.
Conditions	The Prometheus expressions that determine when this alert is triggered. An alert can be triggered at one or more of the following severity levels, but a condition for each severity is not required. • **Critical** : An abnormal condition exists that has stopped the normal operations of a StorageGRID node or service. You must address the underlying issue immediately. Service disruption and loss of data might result if the issue is not resolved. • **Major** : An abnormal condition exists that is either affecting current operations or approaching the threshold for a critical alert. You should investigate major alerts and address any underlying issues to ensure that the abnormal condition does not stop the normal operation of a StorageGRID node or service. • **Minor** : The system is operating normally, but an abnormal condition exists that could affect the system's ability to operate if it continues. You should monitor and resolve minor alerts that do not clear on their own to ensure they do not result in a more serious problem.
Type	The type of alert rule: • **Default**: An alert rule provided with the system. You can disable a default alert rule or edit the conditions and duration for a default alert rule. You cannot remove a default alert rule. • **Default***: A default alert rule that includes an edited condition or duration. As required, you can easily revert a modified condition back to the original default. • **Custom**: An alert rule that you created. You can disable, edit, and remove custom alert rules.
Status	Whether this alert rule is currently enabled or disabled. The conditions for disabled alert rules are not evaluated, so no alerts are triggered.

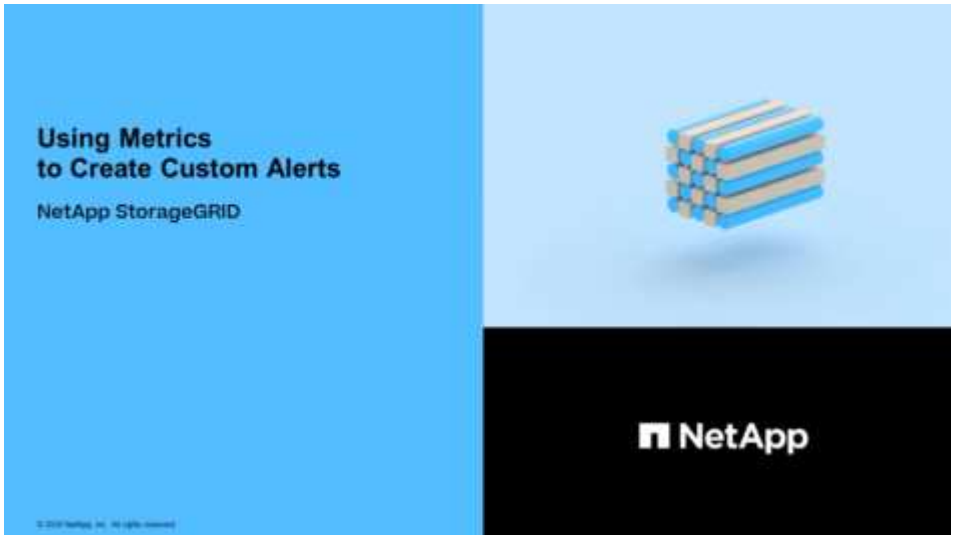
Create custom alert rules

You can create custom alert rules to define your own conditions for triggering alerts.

What you'll need

- You are signed in to the Grid Manager using a supported web browser
- You have the Manage Alerts or Root Access permission

- You are familiar with the commonly used Prometheus metrics
- You understand the syntax of Prometheus queries
- Optionally, you have watched the video: Video: Using Metrics to Create Custom Alerts



About this task

StorageGRID does not validate custom alerts. If you decide to create custom alert rules, follow these general guidelines:

- Look at the conditions for the default alert rules, and use them as examples for your custom alert rules.
- If you define more than one condition for an alert rule, use the same expression for all conditions. Then, change the threshold value for each condition.
- Carefully check each condition for typos and logic errors.
- Use only the metrics listed in the Grid Management API.
- When testing an expression using the Grid Management API, be aware that a "successful" response might simply be an empty response body (no alert triggered). To see if the alert is actually triggered, you can temporarily set a threshold to a value you expect to be true currently.

  For example, to test the expression `node_memory_MemTotal_bytes < 24000000000`, first execute `node_memory_MemTotal_bytes >= 0` and ensure you get the expected results (all nodes return a value). Then, change the operator and the threshold back to the intended values and execute again. No results indicate there are no current alerts for this expression.

- Do not assume a custom alert is working unless you have validated that the alert is triggered when expected.

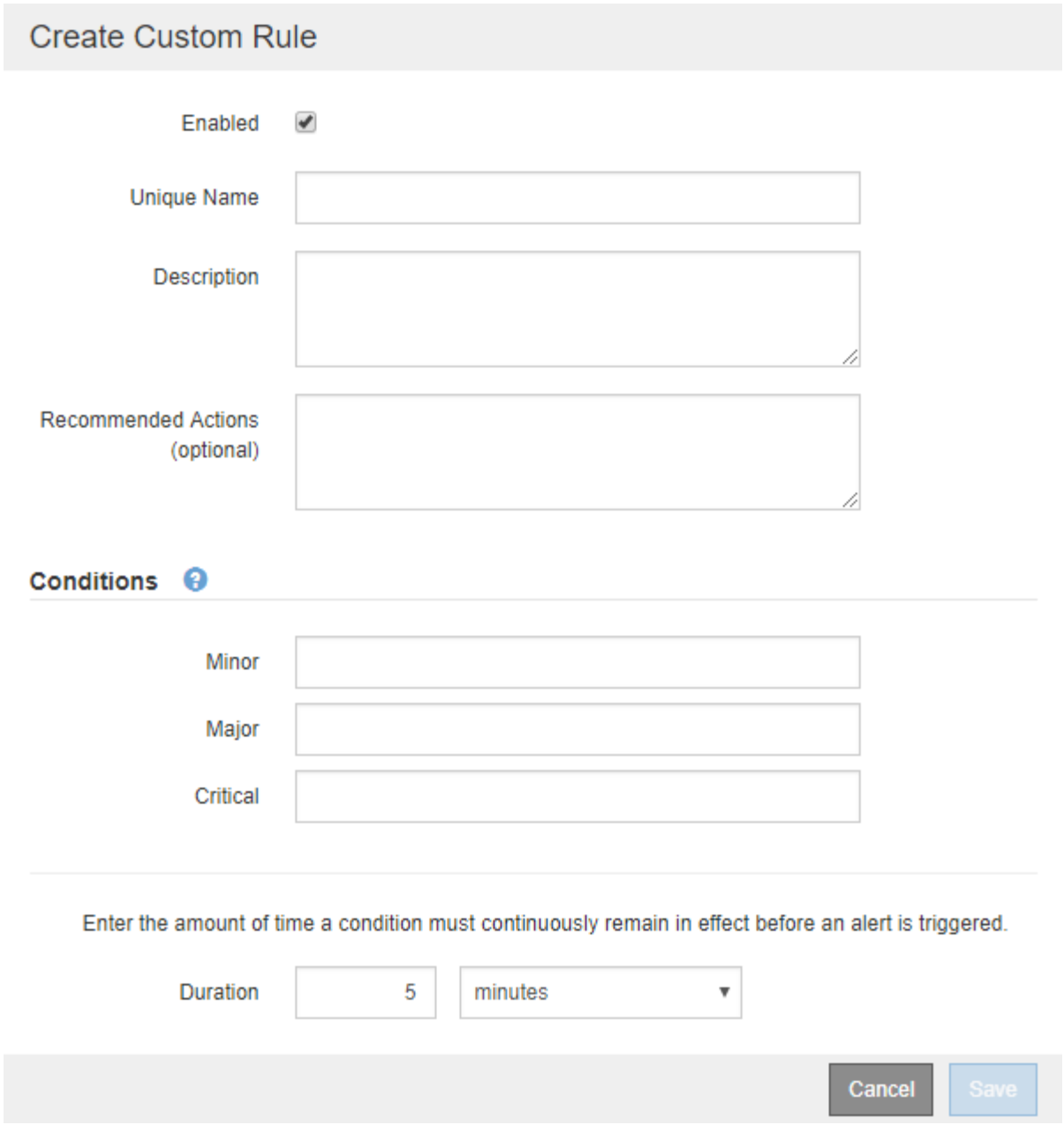
Steps

1. Select **ALERTS** > **Rules**.

   The Alert Rules page appears.

2. Select **Create custom rule**.

   The Create Custom Rule dialog box appears.



3. Select or unselect the **Enabled** check box to determine if this alert rule is currently enabled.

   If an alert rule is disabled, its expressions are not evaluated and no alerts are triggered.

4. Enter the following information:

Field	Description
Unique Name	A unique name for this rule. The alert rule name is shown on the Alerts page and is also the subject for email notifications. Names for alert rules can be between 1 and 64 characters.
Description	A description of the problem that is occurring. The description is the alert message shown on the Alerts page and in email notifications. Descriptions for alert rules can be between 1 and 128 characters.

Field	Description
Recommended Actions	Optionally, the recommended actions to take when this alert is triggered. Enter recommended actions as plain text (no formatting codes). Recommended actions for alert rules can be between 0 and 1,024 characters.

5. In the Conditions section, enter a Prometheus expression for one or more of the alert severity levels.

   A basic expression is usually of the form:

   ```
   [metric] [operator] [value]
   ```

   Expressions can be any length, but appear on a single line in the user interface. At least one expression is required.

   This expression causes an alert to be triggered if the amount of installed RAM for a node is less than 24,000,000,000 bytes (24 GB).

   ```
   node_memory_MemTotal_bytes < 24000000000
   ```

   To see available metrics and to test Prometheus expressions, select the help icon and follow the link to the Metrics section of the Grid Management API.

6. In the **Duration** field, enter the amount of time a condition must continuously remain in effect before the alert is triggered, and select a unit of time.

   To trigger an alert immediately when a condition becomes true, enter **0**. Increase this value to prevent temporary conditions from triggering alerts.

   The default is 5 minutes.

7. Select **Save**.

   The dialog box closes, and the new custom alert rule appears in the Alert Rules table.

Edit alert rules

You can edit an alert rule to change the trigger conditions, For a custom alert rule, you can also update the rule name, description, and recommended actions.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have the Manage Alerts or Root Access permission.

About this task

When you edit a default alert rule, you can change the conditions for minor, major, and critical alerts; and the duration. When you edit a custom alert rule, you can also edit the rule's name, description, and recommended actions.

Be careful when deciding to edit an alert rule. If you change trigger values, you might not detect an underlying problem until it prevents a critical operation from completing.

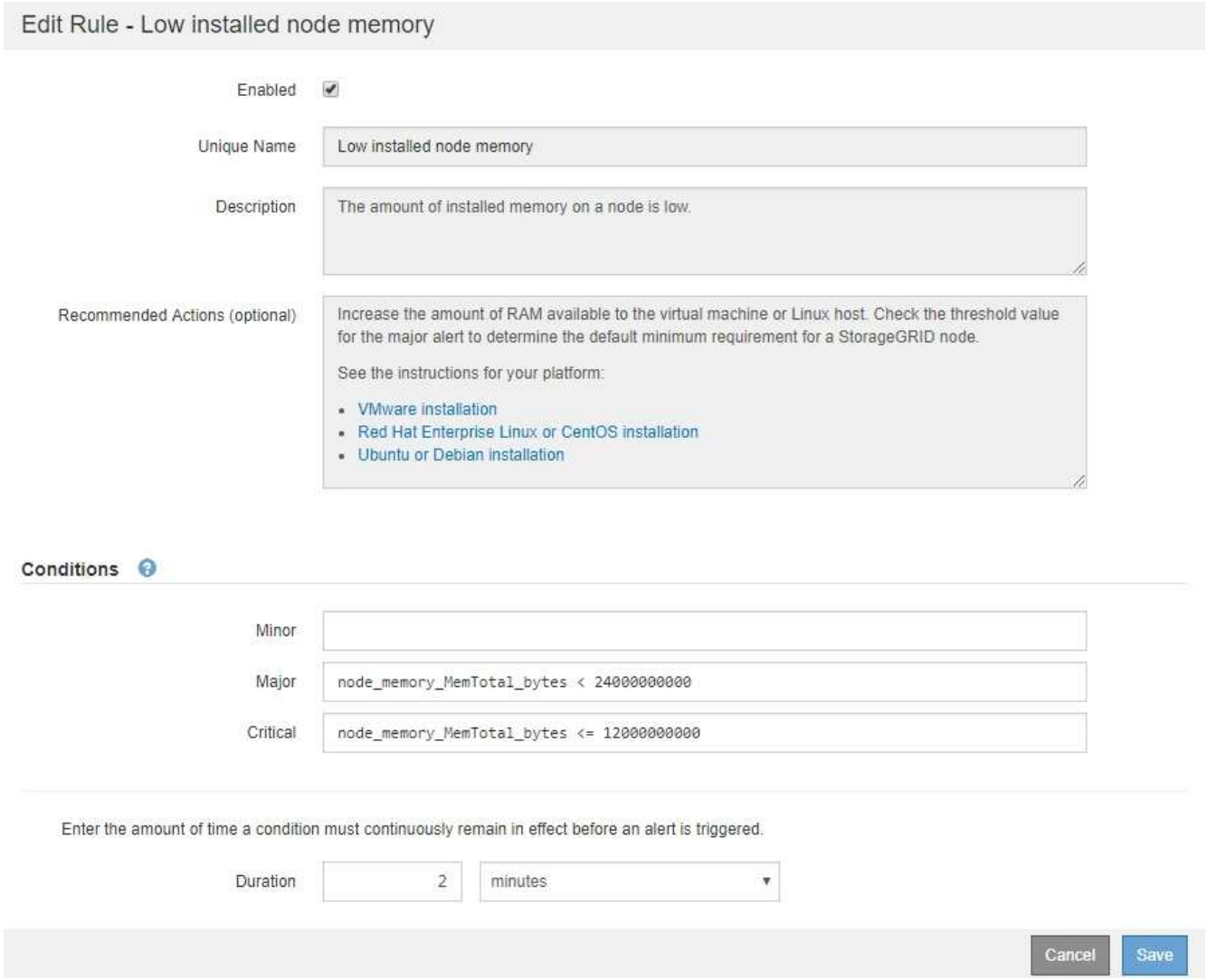
Steps

1. Select **ALERTS** > **Rules**.

   The Alert Rules page appears.

2. Select the radio button for the alert rule you want to edit.
3. Select **Edit rule**.

   The Edit Rule dialog box appears. This example shows a default alert rule—the Unique Name, Description, and Recommended Actions fields are disabled and cannot be edited.



4. Select or unselect the **Enabled** check box to determine if this alert rule is currently enabled.

   If an alert rule is disabled, its expressions are not evaluated and no alerts are triggered.

   If you disable the alert rule for a current alert, you must wait a few minutes for the alert to no longer appear as an active alert.

In general, disabling a default alert rule is not recommended. If an alert rule is disabled, you might not detect an underlying problem until it prevents a critical operation from completing.

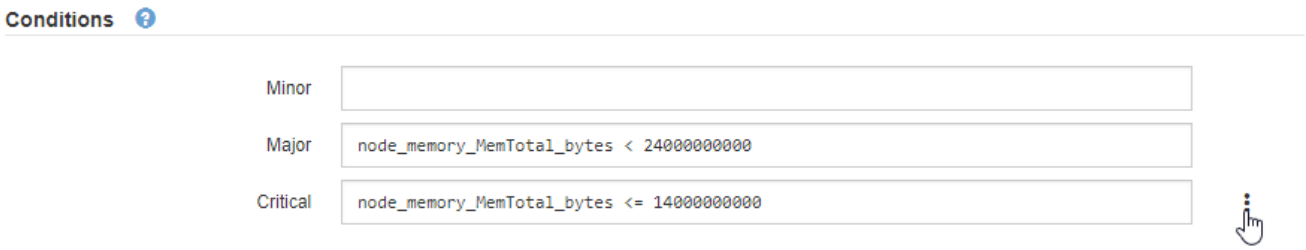
5. For custom alert rules, update the following information as required.

You cannot edit this information for default alert rules.

Field	Description
Unique Name	A unique name for this rule. The alert rule name is shown on the Alerts page and is also the subject for email notifications. Names for alert rules can be between 1 and 64 characters.
Description	A description of the problem that is occurring. The description is the alert message shown on the Alerts page and in email notifications. Descriptions for alert rules can be between 1 and 128 characters.
Recommended Actions	Optionally, the recommended actions to take when this alert is triggered. Enter recommended actions as plain text (no formatting codes). Recommended actions for alert rules can be between 0 and 1,024 characters.

6. In the Conditions section, enter or update the Prometheus expression for one or more of the alert severity levels.

If you want to restore a condition for an edited default alert rule back to its original value, select the three dots to the right of the modified condition.



If you update the conditions for a current alert, your changes might not be implemented until the previous condition is resolved. The next time one of the conditions for the rule is met, the alert will reflect the updated values.

A basic expression is usually of the form:

```
[metric] [operator] [value]
```

Expressions can be any length, but appear on a single line in the user interface. At least one expression is required.

This expression causes an alert to be triggered if the amount of installed RAM for a node is less than 24,000,000,000 bytes (24 GB).

```
node_memory_MemTotal_bytes < 24000000000
```

7. In the **Duration** field, enter the amount of time a condition must continuously remain in effect before the alert is triggered, and select the unit of time.

   To trigger an alert immediately when a condition becomes true, enter **0**. Increase this value to prevent temporary conditions from triggering alerts.

   The default is 5 minutes.

8. Select **Save**.

   If you edited a default alert rule, **Default*** appears in the Type column. If you disabled a default or custom alert rule, **Disabled** appears in the **Status** column.

Disable alert rules

You can change the enabled/disabled state for a default or custom alert rule.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have the Manage Alerts or Root Access permission.

About this task

When an alert rule is disabled, its expressions are not evaluated and no alerts are triggered.

> In general, disabling a default alert rule is not recommended. If an alert rule is disabled, you might not detect an underlying problem until it prevents a critical operation from completing.

Steps

1. Select **ALERTS** > **Rules**.

   The Alert Rules page appears.

2. Select the radio button for the alert rule you want to disable or enable.
3. Select **Edit rule**.

   The Edit Rule dialog box appears.

4. Select or unselect the **Enabled** check box to determine if this alert rule is currently enabled.

   If an alert rule is disabled, its expressions are not evaluated and no alerts are triggered.

   > If you disable the alert rule for a current alert, you must wait a few minutes for the alert to no longer display as an active alert.

5. Select **Save**.

   Disabled appears in the **Status** column.

Remove custom alert rules

You can remove a custom alert rule if you no longer want to use it.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have the Manage Alerts or Root Access permission.

Steps

1. Select **ALERTS** > **Rules**.

   The Alert Rules page appears.

2. Select the radio button for the custom alert rule you want to remove.

   You cannot remove a default alert rule.

3. Select **Remove custom rule**.

   A confirmation dialog box appears.

4. Select **OK** to remove the alert rule.

   Any active instances of the alert will be resolved within 10 minutes.

Manage alert notifications

Set up SNMP notifications for alerts

If you want StorageGRID to send SNMP notifications when alerts occur, you must enable the StorageGRID SNMP agent and configure one or more trap destinations.

You can use the **CONFIGURATION** > **Monitoring** > **SNMP agent** option in the Grid Manager or the SNMP endpoints for the Grid Management API to enable and configure the StorageGRID SNMP agent. The SNMP agent supports all three versions of the SNMP protocol.

To learn how to configure the SNMP agent, see Use SNMP monitoring.

After you configure the StorageGRID SNMP agent, two types of event-driven notifications can be sent:

- Traps are notifications sent by the SNMP agent that do not require acknowledgment by the management system. Traps serve to notify the management system that something has happened within StorageGRID, such as an alert being triggered. Traps are supported in all three versions of SNMP.
- Informs are similar to traps, but they require acknowledgment by the management system. If the SNMP agent does not receive an acknowledgment within a certain amount of time, it resends the inform until an acknowledgment is received or the maximum retry value has been reached. Informs are supported in SNMPv2c and SNMPv3.

Trap and inform notifications are sent when a default or custom alert is triggered at any severity level. To suppress SNMP notifications for an alert, you must configure a silence for the alert. See Silence alert notifications.

Alert notifications are sent by whichever Admin Node is configured to be the preferred sender. By default, the

primary Admin Node is selected. See the instructions for administering StorageGRID.

> Trap and inform notifications are also sent when certain alarms (legacy system) are triggered at specified severity levels or higher; however, SNMP notifications are not sent for every alarm or every alarm severity. See Alarms that generate SNMP notifications (legacy system).

Set up email notifications for alerts

If you want email notifications to be sent when alerts occur, you must provide information about your SMTP server. You must also enter email addresses for the recipients of alert notifications.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have the Manage Alerts or Root Access permission.

About this task

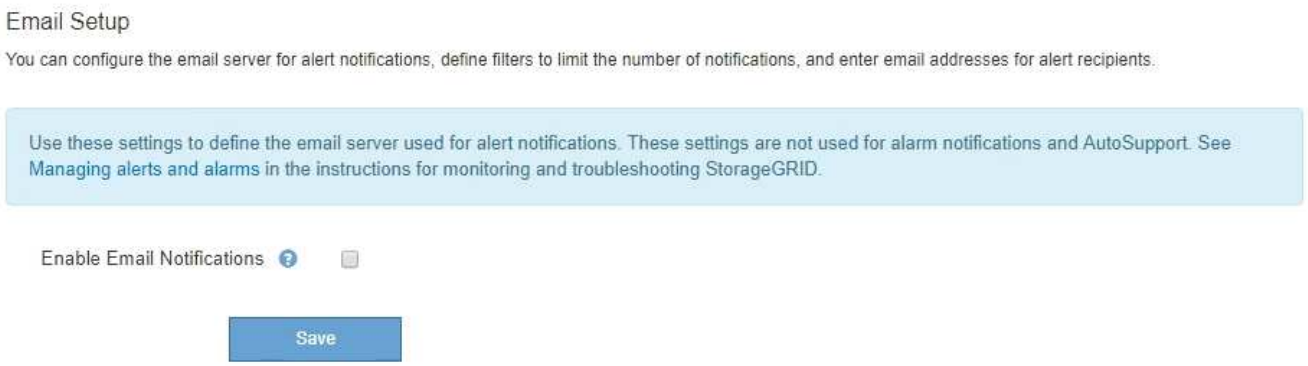
Because alarms and alerts are independent systems, the email setup used for alert notifications is not used for alarm notifications and AutoSupport messages. However, you can use the same email server for all notifications.

If your StorageGRID deployment includes multiple Admin Nodes, you can select which Admin Node should be the preferred sender of alert notifications. The same "preferred sender" is also used for alarm notifications and AutoSupport messages. By default, the primary Admin Node is selected. For details, see the instructions for administering StorageGRID.

Steps

1. Select **ALERTS** > **Email setup**.

   The Email Setup page appears.



2. Select the **Enable Email Notifications** check box to indicate that you want notification emails to be sent when alerts reach configured thresholds.

   The Email (SMTP) Server, Transport Layer Security (TLS), Email Addresses, and Filters sections appear.

3. In the Email (SMTP) Server section, enter the information StorageGRID needs to access your SMTP server.

   If your SMTP server requires authentication, you must provide both a username and a password.

Field	Enter
Mail Server	The fully qualified domain name (FQDN) or IP address of the SMTP server.
Port	The port used to access the SMTP server. Must be between 1 and 65535.
Username (optional)	If your SMTP server requires authentication, enter the username to authenticate with.
Password (optional)	If your SMTP server requires authentication, enter the password to authenticate with.

4. In the Email Addresses section, enter email addresses for the sender and for each recipient.

   a. For the **Sender Email Address**, specify a valid email address to use as the From address for alert notifications.

      For example: `storagegrid-alerts@example.com`

   b. In the Recipients section, enter an email address for each email list or person who should receive an email when an alert occurs.

      Select the plus icon ➕ to add recipients.

5. If Transport Layer Security (TLS) is required for communications with the SMTP server, select **Require TLS** in the Transport Layer Security (TLS) section.

   a. In the **CA Certificate** field, provide the CA certificate that will be used to verify the identify of the SMTP server.

You can copy and paste the contents into this field, or select **Browse** and select the file.

You must provide a single file that contains the certificates from each intermediate issuing certificate authority (CA). The file should contain each of the PEM-encoded CA certificate files, concatenated in certificate chain order.

b. Select the **Send Client Certificate** check box if your SMTP email server requires email senders to provide client certificates for authentication.

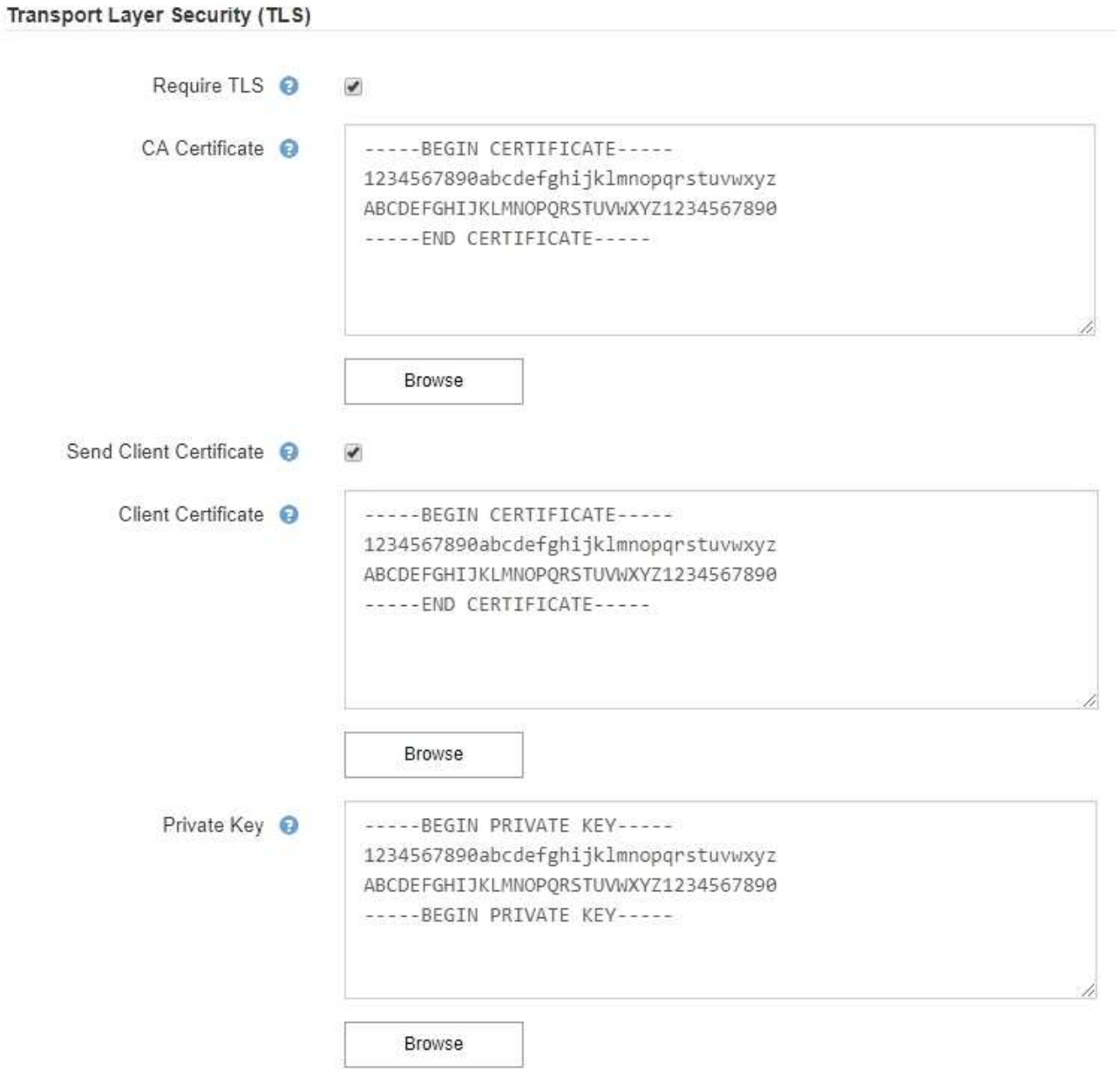
c. In the **Client Certificate** field, provide the PEM-encoded client certificate to send to the SMTP server.

You can copy and paste the contents into this field, or select **Browse** and select the file.

d. In the **Private Key** field, enter the private key for the client certificate in unencrypted PEM encoding.

You can copy and paste the contents into this field, or select **Browse** and select the file.

If you need to edit the email setup, select the pencil icon to update this field.



6. In the Filters section, select which alert severity levels should result in email notifications, unless the rule for a specific alert has been silenced.

Severity	Description
Minor, major, critical	An email notification is sent when the minor, major, or critical condition for an alert rule is met.
Major, critical	An email notification is sent when the major or critical condition for an alert rule is met. Notifications are not sent for minor alerts.
Critical only	An email notification is sent only when the critical condition for an alert rule is met. Notifications are not sent for minor or major alerts.

7. When you are ready to test your email settings, perform these steps:
   a. Select **Send Test Email**.

      A confirmation message appears, indicating that a test email was sent.

   b. Check the inboxes of all email recipients and confirm that a test email was received.

      If the email is not received within a few minutes or if the **Email notification failure** alert is triggered, check your settings and try again.

   c. Sign in to any other Admin Nodes and send a test email to verify connectivity from all sites.

      When you test alert notifications, you must sign in to every Admin Node to verify connectivity. This is in contrast to testing alarm notifications and AutoSupport messages, where all Admin Nodes send the test email.

8. Select **Save**.

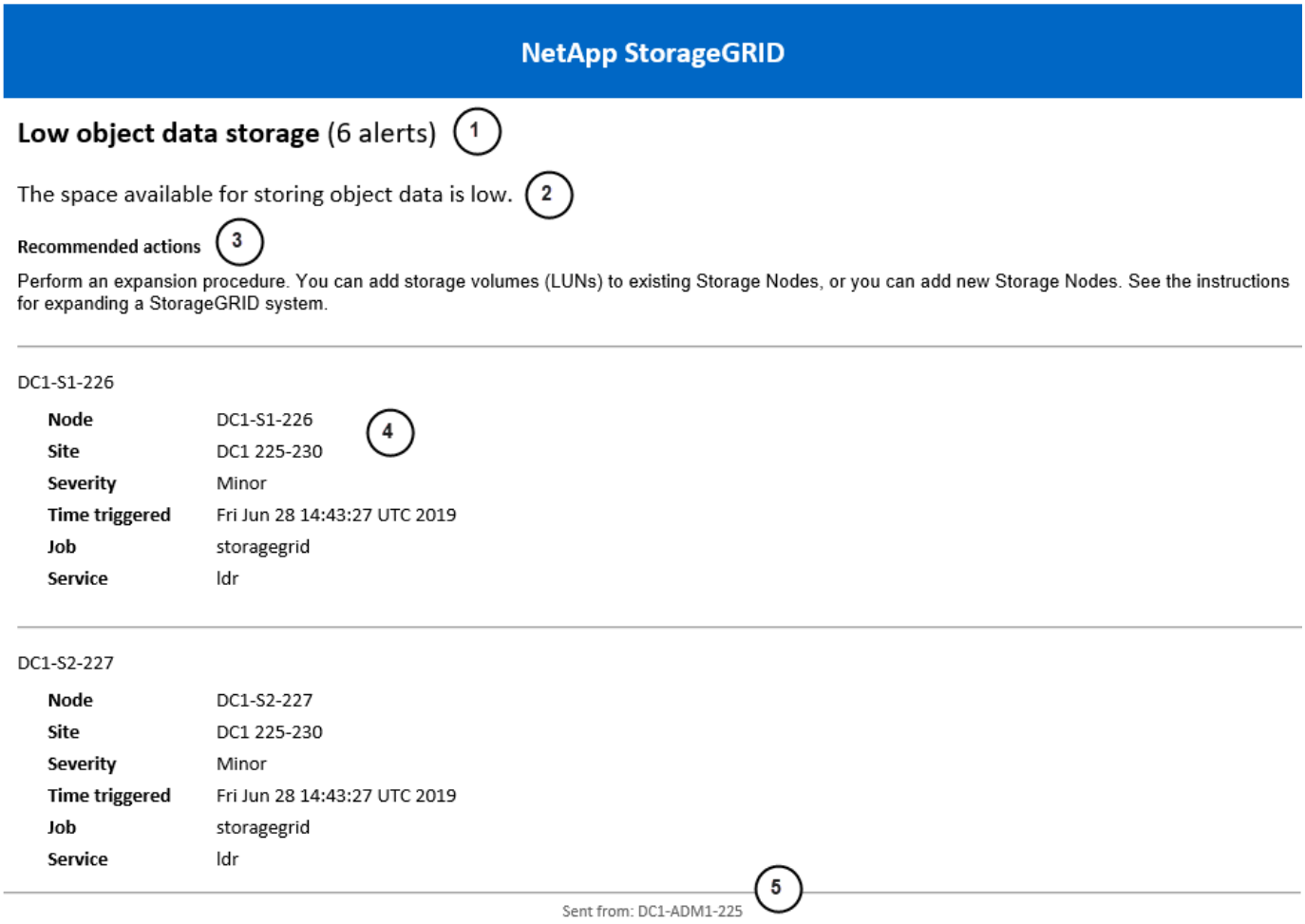
   Sending a test email does not save your settings. You must select **Save**.

   The email settings are saved.

Information included in alert email notifications

After you configure the SMTP email server, email notifications are sent to the designated recipients when an alert is triggered, unless the alert rule is suppressed by a silence. See Silence alert notifications.

Email notifications include the following information:



Callout	Description
1	The name of the alert, followed by the number of active instances of this alert.
2	The description of the alert.
3	Any recommended actions for the alert.
4	Details about each active instance of the alert, including the node and site affected, the alert severity, the UTC time when the alert rule was triggered, and the name of the affected job and service.
5	The hostname of the Admin Node that sent the notification.

How alerts are grouped

To prevent an excessive number of email notifications from being sent when alerts are triggered, StorageGRID attempts to group multiple alerts in the same notification.

Refer to the following table for examples of how StorageGRID groups multiple alerts in email notifications.

Behavior	Example
Each alert notification applies only to alerts that have the same name. If two alerts with different names are triggered at the same time, two email notifications are sent.	• Alert A is triggered on two nodes at the same time. Only one notification is sent. • Alert A is triggered on node 1, and Alert B is triggered on node 2 at the same time. Two notifications are sent—one for each alert.
For a specific alert on a specific node, if the thresholds are reached for more than one severity, a notification is sent only for the most severe alert.	• Alert A is triggered and the minor, major, and critical alert thresholds are reached. One notification is sent for the critical alert.
The first time an alert is triggered, StorageGRID waits 2 minutes before sending a notification. If other alerts with the same name are triggered during that time, StorageGRID groups all of the alerts in the initial notification.	1. Alert A is triggered on node 1 at 08:00. No notification is sent. 2. Alert A is triggered on node 2 at 08:01. No notification is sent. 3. At 08:02, a notification is sent to report both instances of the alert.
If an another alert with the same name is triggered, StorageGRID waits 10 minutes before sending a new notification. The new notification reports all active alerts (current alerts that have not been silenced), even if they were reported previously.	1. Alert A is triggered on node 1 at 08:00. A notification is sent at 08:02. 2. Alert A is triggered on node 2 at 08:05. A second notification is sent at 08:15 (10 minutes later). Both nodes are reported.
If there are multiple current alerts with the same name and one of those alerts is resolved, a new notification is not sent if the alert reoccurs on the node for which the alert was resolved.	1. Alert A is triggered for node 1. A notification is sent. 2. Alert A is triggered for node 2. A second notification is sent. 3. Alert A is resolved for node 2, but it remains active for node 1. 4. Alert A is triggered again for node 2. No new notification is sent because the alert is still active for node 1.
StorageGRID continues to send email notifications once every 7 days until all instances of the alert are resolved or the alert rule is silenced.	1. Alert A is triggered for node 1 on March 8. A notification is sent. 2. Alert A is not resolved or silenced. Additional notifications are sent on March 15, March 22, March 29, and so on.

Troubleshoot alert email notifications

If the **Email notification failure** alert is triggered or you are unable to receive the test alert email notification, follow these steps to resolve the issue.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have the Manage Alerts or Root Access permission.

Steps

1. Verify your settings.
   a. Select **ALERTS** > **Email setup**.
   b. Verify that the Email (SMTP) Server settings are correct.
   c. Verify that you have specified valid email addresses for the recipients.
2. Check your spam filter, and make sure that the email was not sent to a junk folder.
3. Ask your email administrator to confirm that emails from the sender address are not being blocked.
4. Collect a log file for the Admin Node, and then contact technical support.

   Technical support can use the information in the logs to help determine what went wrong. For example, the prometheus.log file might show an error when connecting to the server you specified.

   See Collect log files and system data.

Silence alert notifications

Optionally, you can configure silences to temporarily suppress alert notifications.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have the Manage Alerts or Root Access permission.

About this task

You can silence alert rules on the entire grid, a single site, or a single node and for one or more severities. Each silence suppresses all notifications for a single alert rule or for all alert rules.

If you have enabled the SNMP agent, silences also suppress SNMP traps and informs.

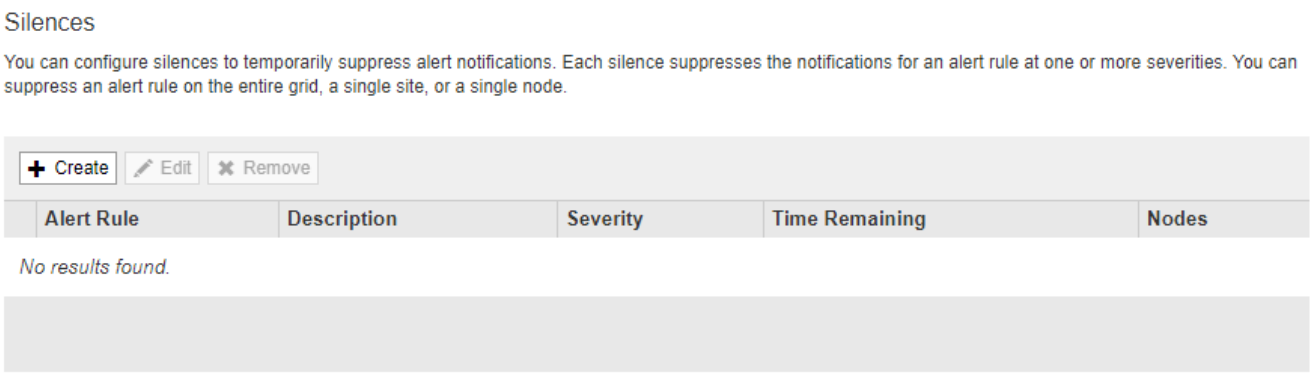
> Be careful when deciding to silence an alert rule. If you silence an alert, you might not detect an underlying problem until it prevents a critical operation from completing.

> Because alarms and alerts are independent systems, you cannot use this functionality to suppress alarm notifications.

Steps

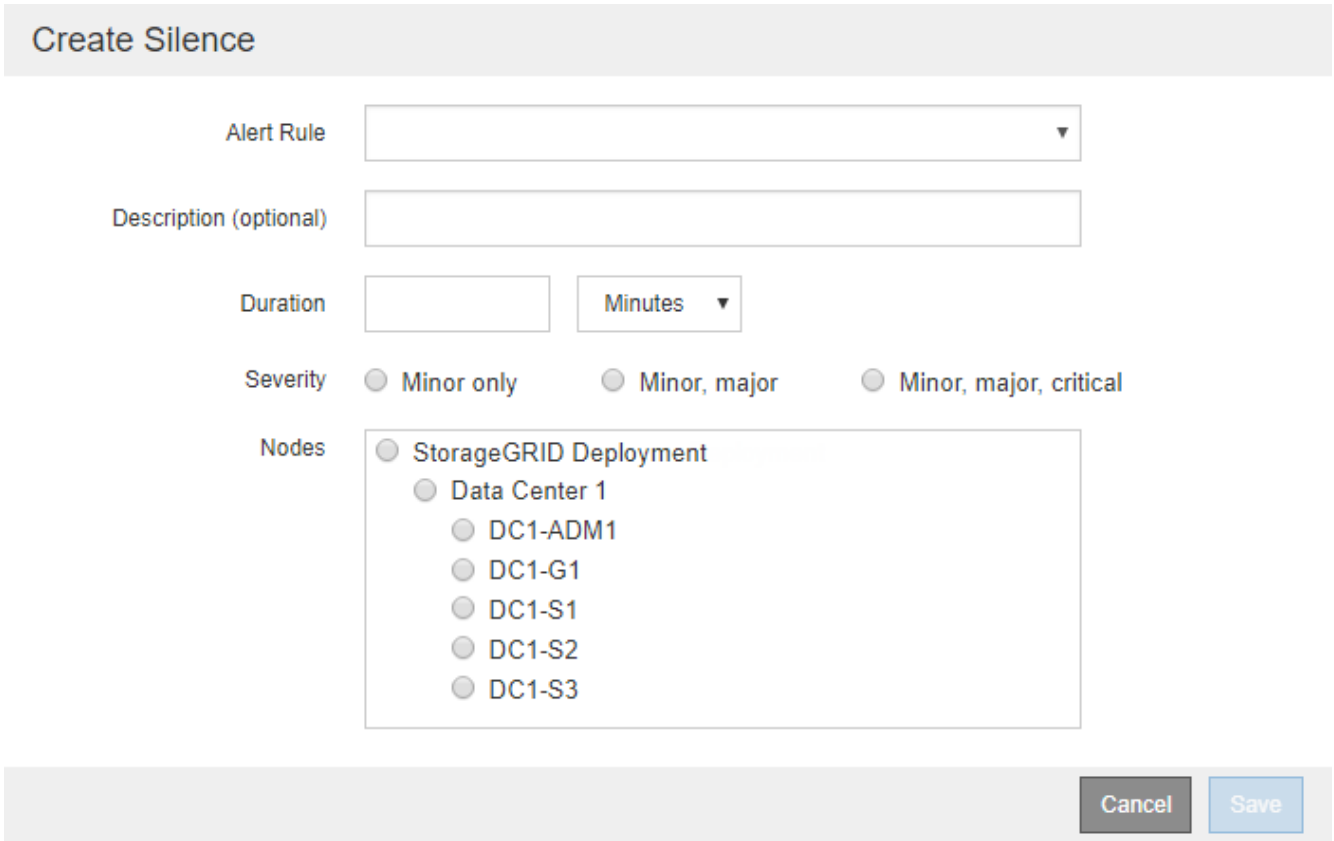
1. Select **ALERTS** > **Silences**.

   The Silences page appears.



2. Select **Create**.

   The Create Silence dialog box appears.



3. Select or enter the following information:

Field	Description
Alert Rule	The name of the alert rule you want to silence. You can select any default or custom alert rule, even if the alert rule is disabled. **Note:** Select **All rules** if you want to silence all alert rules using the criteria specified in this dialog box.
Description	Optionally, a description of the silence. For example, describe the purpose of this silence.

Field	Description
Duration	How long you want this silence to remain in effect, in minutes, hours, or days. A silence can be in effect from 5 minutes to 1,825 days (5 years). **Note:** You should not silence an alert rule for an extended amount of time. If an alert rule is silenced, you might not detect an underlying problem until it prevents a critical operation from completing. However, you might need to use an extended silence if an alert is triggered by a specific, intentional configuration, such as might be the case for the **Services appliance link down** alerts and the **Storage appliance link down** alerts.
Severity	Which alert severity or severities should be silenced. If the alert is triggered at one of the selected severities, no notifications are sent.
Nodes	Which node or nodes you want this silence to apply to. You can suppress an alert rule or all rules on the entire grid, a single site, or a single node. If you select the entire grid, the silence applies to all sites and all nodes. If you select a site, the silence applies only to the nodes at that site. **Note:** You cannot select more than one node or more than one site for each silence. You must create additional silences if you want to suppress the same alert rule on more than one node or more than one site at one time.

4. Select **Save**.
5. If you want to modify or end a silence before it expires, you can edit or remove it.

Option	Description
Edit a silence	a. Select **ALERTS** > **Silences**. b. From the table, select the radio button for the silence you want to edit. c. Select **Edit**. d. Change the description, the amount of time remaining, the selected severities, or the affected node. e. Select **Save**.
Remove a silence	a. Select **ALERTS** > **Silences**. b. From the table, select the radio button for the silence you want to remove. c. Select **Remove**. d. Select **OK** to confirm you want to remove this silence. **Note**: Notifications will now be sent when this alert is triggered (unless suppressed by another silence). If this alert is currently triggered, it might take few minutes for email or SNMP notifications to be sent and for the Alerts page to update.

Related information

- Configure the SNMP agent

Manage alarms (legacy system)

The StorageGRID alarm system is the legacy system used to identify trouble spots that sometimes occur during normal operation.

While the legacy alarm system continues to be supported, the alert system offers significant benefits and is easier to use.

Alarm classes (legacy system)

A legacy alarm can belong to one of two mutually exclusive alarm classes.

- Default alarms are provided with each StorageGRID system and cannot be modified. However, you can disable Default alarms or override them by defining Global Custom alarms.
- Global Custom alarms monitor the status of all services of a given type in the StorageGRID system. You can create a Global Custom alarm to override a Default alarm. You can also create a new Global Custom alarm. This can be useful for monitoring any customized conditions of your StorageGRID system.

Alarm triggering logic (legacy system)

A legacy alarm is triggered when a StorageGRID attribute reaches a threshold value that evaluates to true against a combination of alarm class (Default or Global Custom) and alarm severity level.

Icon	Color	Alarm severity	Meaning
	Yellow	Notice	The node is connected to the grid, but an unusual condition exists that does not affect normal operations.
	Light Orange	Minor	The node is connected to the grid, but an abnormal condition exists that could affect operation in the future. You should investigate to prevent escalation.
	Dark Orange	Major	The node is connected to the grid, but an abnormal condition exists that currently affects operation. This requires prompt attention to prevent escalation.
	Red	Critical	The node is connected to the grid, but an abnormal condition exists that has stopped normal operations. You should address the issue immediately.

The alarm severity and corresponding threshold value can be set for every numerical attribute. The NMS service on each Admin Node continuously monitors current attribute values against configured thresholds. When an alarm is triggered, a notification is sent to all designated personnel.

Note that a severity level of Normal does not trigger an alarm.

Attribute values are evaluated against the list of enabled alarms defined for that attribute. The list of alarms is

checked in the following order to find the first alarm class with a defined and enabled alarm for the attribute:

1. Global Custom alarms with alarm severities from Critical down to Notice.
2. Default alarms with alarm severities from Critical down to Notice.

After an enabled alarm for an attribute is found in the higher alarm class, the NMS service only evaluates within that class. The NMS service will not evaluate against the other lower priority classes. That is, if there is an enabled Global Custom alarm for an attribute, the NMS service only evaluates the attribute value against Global Custom alarms. Default alarms are not evaluated. Thus, an enabled Default alarm for an attribute can meet the criteria needed to trigger an alarm, but it will not be triggered because a Global Custom alarm (that does not meet the specified criteria) for the same attribute is enabled. No alarm is triggered and no notification is sent.

Alarm triggering example

You can use this example to understand how Global Custom alarms and Default alarms are triggered.

For the following example, an attribute has a Global Custom alarm and a Default alarm defined and enabled as shown in the following table.

	Global Custom alarm threshold (enabled)	**Default alarm threshold (enabled)**
Notice	>= 1500	>= 1000
Minor	>= 15,000	>= 1000
Major	>=150,000	>= 250,000

If the attribute is evaluated when its value is 1000, no alarm is triggered and no notification is sent.

The Global Custom alarm takes precedence over the Default alarm. A value of 1000 does not reach the threshold value of any severity level for the Global Custom alarm. As a result, the alarm level is evaluated to be Normal.

After the above scenario, if the Global Custom alarm is disabled, nothing changes. The attribute value must be reevaluated before a new alarm level is triggered.

With the Global Custom alarm disabled, when the attribute value is reevaluated, the attribute value is evaluated against the threshold values for the Default alarm. The alarm level triggers a Notice level alarm and an email notification is sent to the designated personnel.

Alarms of same severity

If two Global Custom alarms for the same attribute have the same severity, the alarms are evaluated with a “top down” priority.

For instance, if UMEM drops to 50MB, the first alarm is triggered (= 50000000), but not the one below it (<=100000000).

Global Alarms
Updated: 2016-03-17 16:05:31 PDT

Global Custom Alarms (0 Result(s))

Enabled	Service	Attribute	Severity	Message	Operator	Value	Additional Recipients	Actions
☑	SSM	UMEM (Available Memory)	Minor	Under 50	=	5000		
☑	SSM	UMEM (Available Memory)	Minor	under10	<=	1000		

If the order is reversed, when UMEM drops to 100MB, the first alarm (<=100000000) is triggered, but not the one below it (= 50000000).

Global Alarms
Updated: 2016-03-17 16:05:31 PDT

Global Custom Alarms (0 Result(s))

Enabled	Service	Attribute	Severity	Message	Operator	Value	Additional Recipients	Actions
☑	SSM	UMEM (Available Memory)	Minor	under10	<=	1000		
☑	SSM	UMEM (Available Memory)	Minor	Under 50	=	5000		

Default Alarms

Filter by Disabled Defaults

0 Result(s)

Enabled	Service	Attribute	Severity	Message	Operator	Value	Actions

Apply Changes

Notifications

A notification reports the occurrence of an alarm or the change of state for a service. Alarm notifications can be sent in email or using SNMP.

To avoid multiple alarms and notifications being sent when an alarm threshold value is reached, the alarm severity is checked against the current alarm severity for the attribute. If there is no change, then no further action is taken. This means that as the NMS service continues to monitor the system, it will only raise an alarm and send notifications the first time it notices an alarm condition for an attribute. If a new value threshold for the attribute is reached and detected, the alarm severity changes and a new notification is sent. Alarms are cleared when conditions return to the Normal level.

The trigger value shown in the notification of an alarm state is rounded to three decimal places. Therefore, an attribute value of 1.9999 triggers an alarm whose threshold is less than (<) 2.0, although the alarm notification shows the trigger value as 2.0.

New services

As new services are added through the addition of new grid nodes or sites, they inherit Default alarms and Global Custom alarms.

Alarms and tables

Alarm attributes displayed in tables can be disabled at the system level. Alarms cannot be disabled for individual rows in a table.

For example, the following table shows two critical Entries Available (VMFI) alarms. (Select **SUPPORT** > **Tools** > **Grid topology**. Then, select ***Storage Node*** > **SSM** > **Resources**.)

You can disable the VMFI alarm so that the Critical level VMFI alarm is not triggered (both currently Critical alarms would appear in the table as green); however, you cannot disable a single alarm in a table row so that one VMFI alarm displays as a Critical level alarm while the other remains green.

Volumes

Mount Point	Device	Status	Size	Space Available	Total Entries	Entries Available	Write Cache
/	sda1	Online	10.6 GB	7.46 GB	655,360	559,263	Enabled
/var/local	sda3	Online	63.4 GB	59.4 GB	3,932,160	3,931,842	Unknown
/var/local/rangedb/0	sdb	Online	53.4 GB	53.4 GB	52,428,800	52,427,856	Enabled
/var/local/rangedb/1	sdc	Online	53.4 GB	53.4 GB	52,428,800	52,427,848	Enabled
/var/local/rangedb/2	sdd	Online	53.4 GB	53.4 GB	52,428,800	52,427,856	Enabled

Acknowledge current alarms (legacy system)

Legacy alarms are triggered when system attributes reach alarm threshold values. Optionally, if you want to reduce or clear the list of legacy alarms, you can acknowledge the alarms.

What you'll need

- You must be signed in to the Grid Manager using a supported web browser.
- You must have the Acknowledge Alarms permission.

About this task

Because the legacy alarm system continues to be supported, the list of legacy alarms on the Current Alarms page is increased whenever a new alarm occurs. You can typically ignore the alarms (since alerts provide a better view of the system), or you can acknowledge the alarms.

Optionally, when you have completely transitioned to the alert system, you can disable each legacy alarm to prevent it from being triggered and added to the count of legacy alarms.

When you acknowledge an alarm, it is no longer listed on the Current Alarms page in the Grid Manager, unless the alarm is triggered at the next severity level or it is resolved and occurs again.

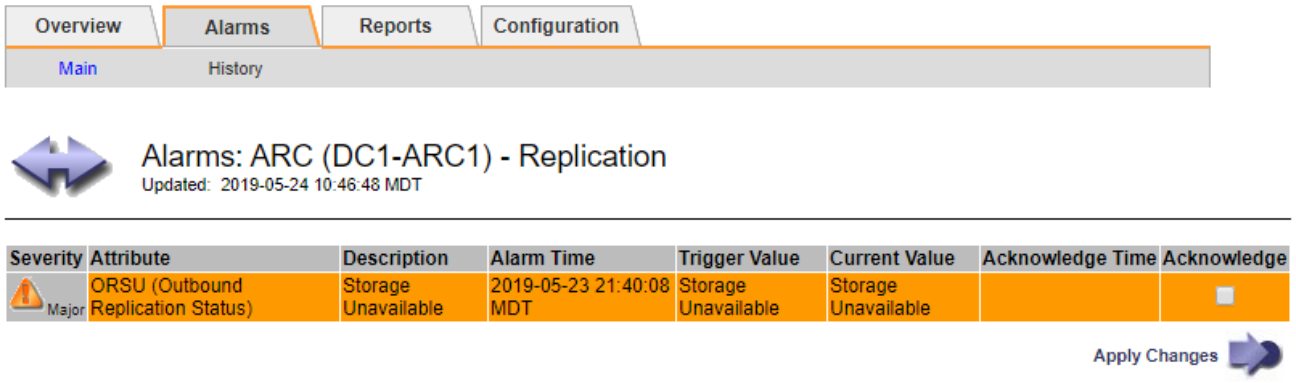
While the legacy alarm system continues to be supported, the alert system offers significant benefits and is easier to use.

Steps

1. Select **SUPPORT** > **Alarms (legacy)** > **Current alarms**.

2. Select the service name in the table.

   The Alarms tab for the selected service appears (**SUPPORT** > **Tools** > **Grid topology** > ***Grid Node*** > ***Service*** > **Alarms**).



3. Select the **Acknowledge** check box for the alarm, and click **Apply Changes**.

   The alarm no longer appears on the Dashboard or the Current Alarms page.

   When you acknowledge an alarm, the acknowledgment is not copied to other Admin Nodes. For this reason, if you view the Dashboard from another Admin Node, you might continue to see the active alarm.

4. As required, view acknowledged alarms.
   a. Select **SUPPORT** > **Alarms (legacy)** > **Current alarms**.
   b. Select **Show Acknowledged Alarms**.

      Any acknowledged alarms are shown.

View Default alarms (legacy system)

You can view the list of all Default legacy alarms.

What you'll need

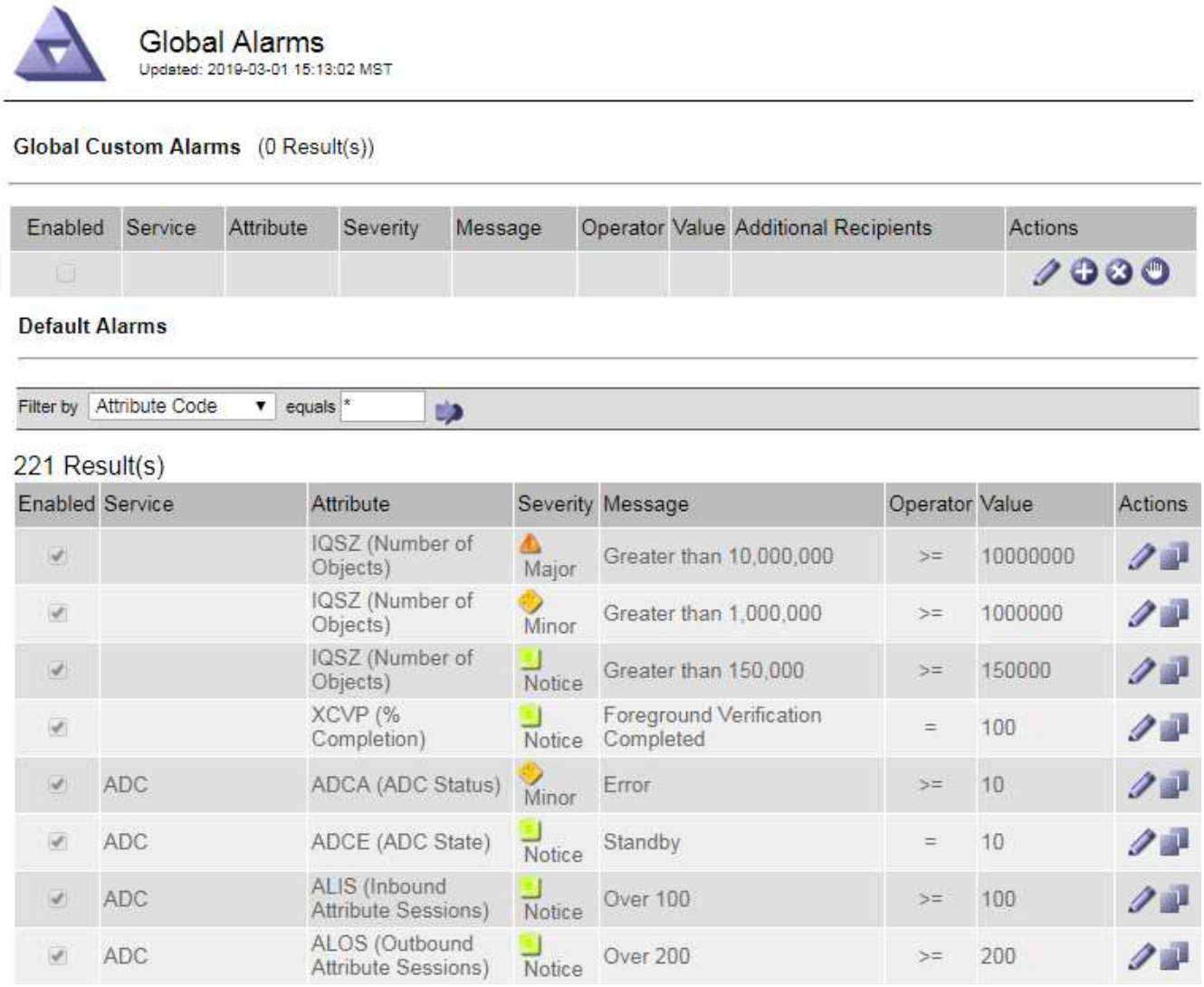
- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.

> While the legacy alarm system continues to be supported, the alert system offers significant benefits and is easier to use.

Steps

1. Select **SUPPORT** > **Alarms (legacy)** > **Global alarms**.
2. For Filter by, select **Attribute Code** or **Attribute Name**.
3. For equals, enter an asterisk: *
4. Click the arrow or press **Enter**.

   All Default alarms are listed.



Review historical alarms and alarm frequency (legacy system)

When troubleshooting an issue, you can review how often a legacy alarm was triggered in the past.

What you'll need

- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.

> While the legacy alarm system continues to be supported, the alert system offers significant benefits and is easier to use.

Steps

1. Follow these steps to get a list of all alarms triggered over a period of time.
   a. Select **SUPPORT** > **Alarms (legacy)** > **Historical alarms**.
   b. Do one of the following:
      - Click one of the time periods.
      - Enter a custom range, and click **Custom Query**.

2. Follow these steps to find out how often alarms have been triggered for a particular attribute.
   a. Select **SUPPORT** > **Tools** > **Grid topology**.
   b. Select ***grid node*** > ***service or component*** > **Alarms** > **History**.
   c. Select the attribute from the list.
   d. Do one of the following:
      - Click one of the time periods.
      - Enter a custom range, and click **Custom Query**.

      The alarms are listed in reverse chronological order.
   e. To return to the alarms history request form, click **History**.

Create Global Custom alarms (legacy system)

You might have used Global Custom alarms for the legacy system to address specific monitoring requirements. Global Custom alarms might have alarm levels that override Default alarms, or they might monitor attributes that do not have a Default alarm.

What you'll need

- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.

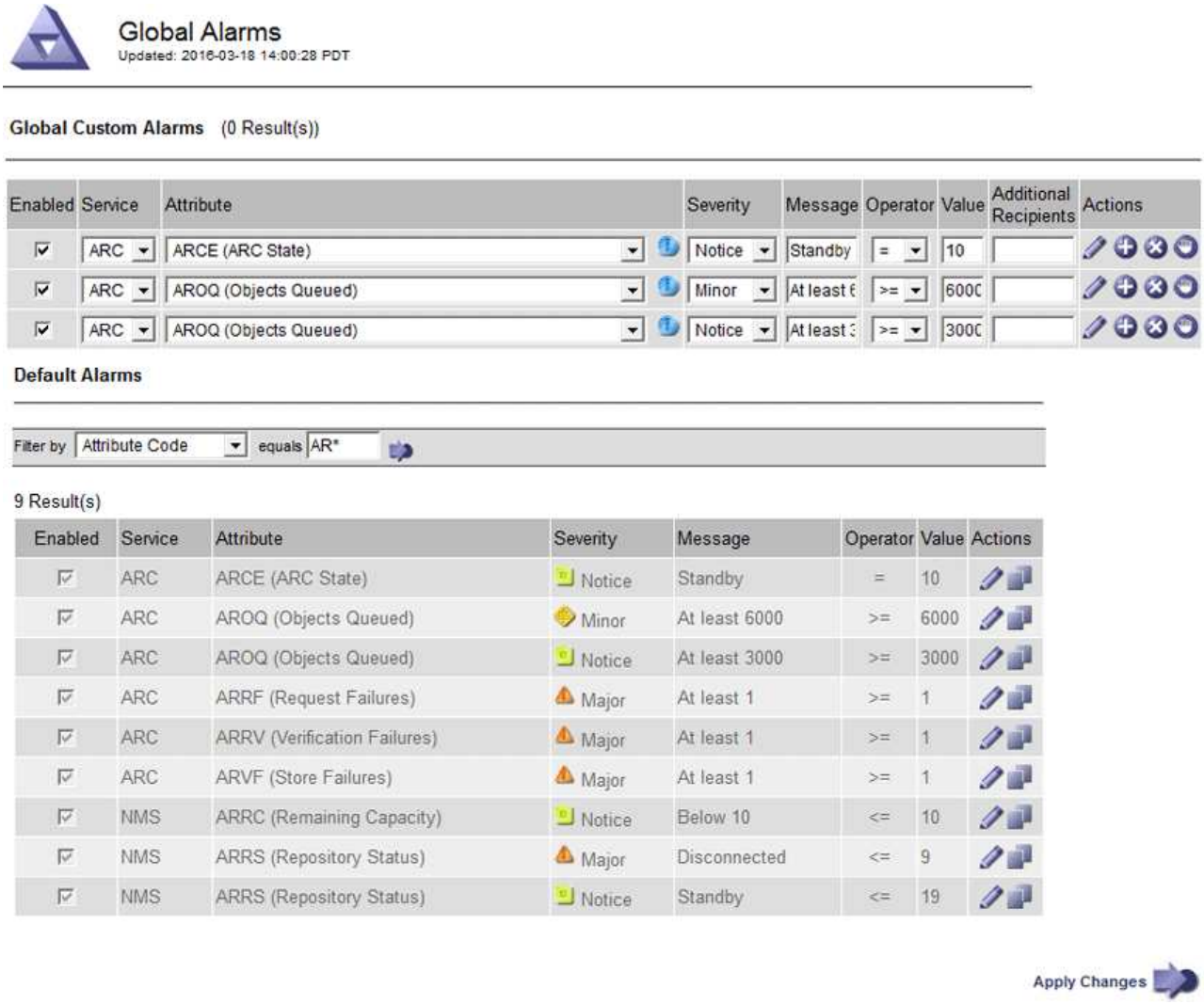
> While the legacy alarm system continues to be supported, the alert system offers significant benefits and is easier to use.

Global Custom alarms override Default alarms. You should not change Default alarm values unless absolutely necessary. By changing Default alarms, you run the risk of concealing problems that might otherwise trigger an alarm.

> Be very careful if you change alarm settings. For example, if you increase the threshold value for an alarm, you might not detect an underlying problem. Discuss your proposed changes with technical support before changing an alarm setting.

Steps

1. Select **SUPPORT** > **Alarms (legacy)** > **Global alarms**.
2. Add a new row to the Global Custom alarms table:
   - To add a new alarm, click **Edit** (if this is the first entry) or **Insert**.



- To modify a Default alarm, search for the Default alarm.
  i. Under Filter by, select either **Attribute Code** or **Attribute Name**.
  ii. Type a search string.

  Specify four characters or use wildcards (for example, A??? or AB*). Asterisks (*) represent multiple characters, and question marks (?) represent a single character.

  iii. Click the arrow , or press **Enter**.
  iv. In the list of results, click **Copy** next to the alarm you want to modify.

  The Default alarm is copied to the Global Custom alarms table.

3. Make any necessary changes to the Global Custom alarms settings:

Heading	Description
Enabled	Select or unselect the check box to enable or disable the alarm.

Heading	Description
Attribute	Select the name and code of the attribute being monitored from the list of all attributes applicable to the selected service or component. To display information about the attribute, click **Info** next to the attribute's name.
Severity	The icon and text indicating the level of the alarm.
Message	The reason for the alarm (connection lost, storage space below 10%, and so on).
Operator	Operators for testing the current attribute value against the Value threshold: • = equals • > greater than • < less than • >= greater than or equal to • <= less than or equal to • ≠ not equal to
Value	The alarm's threshold value used to test against the attribute's actual value using the operator. The entry can be a single number, a range of numbers specified with a colon (1:3), or a comma-delineated list of numbers and ranges.
Additional Recipients	A supplementary list of email addresses to be notified when the alarm is triggered. This is in addition to the mailing list configured on the **Alarms** > **Email Setup** page. Lists are comma delineated. **Note:** Mailing lists require SMTP server setup in order to operate. Before adding mailing lists, confirm that SMTP is configured. Notifications for Custom alarms can override notifications from Global Custom or Default alarms.
Actions	Control buttons to: Edit a row + Insert a row + Delete a row + Drag-and-drop a row up or down + Copy a row

4. Click **Apply Changes**.

Disable alarms (legacy system)

The alarms in the legacy alarm system are enabled by default, but you can disable alarms that are not required. You can also disable the legacy alarms after you have completely transitioned to the new alert system.

> While the legacy alarm system continues to be supported, the alert system offers significant benefits and is easier to use.

Disable a Default alarm (legacy system)

You can disable one of the legacy Default alarms for the entire system.

What you'll need

- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.

About this task

Disabling an alarm for an attribute that currently has an alarm triggered does not clear the current alarm. The alarm will be disabled the next time the attribute crosses the alarm threshold, or you can clear the triggered alarm.

> Do not disable any of the legacy alarms until you have completely transitioned to the new alert system. Otherwise, you might not detect an underlying problem until it has prevented a critical operation from completing.

Steps

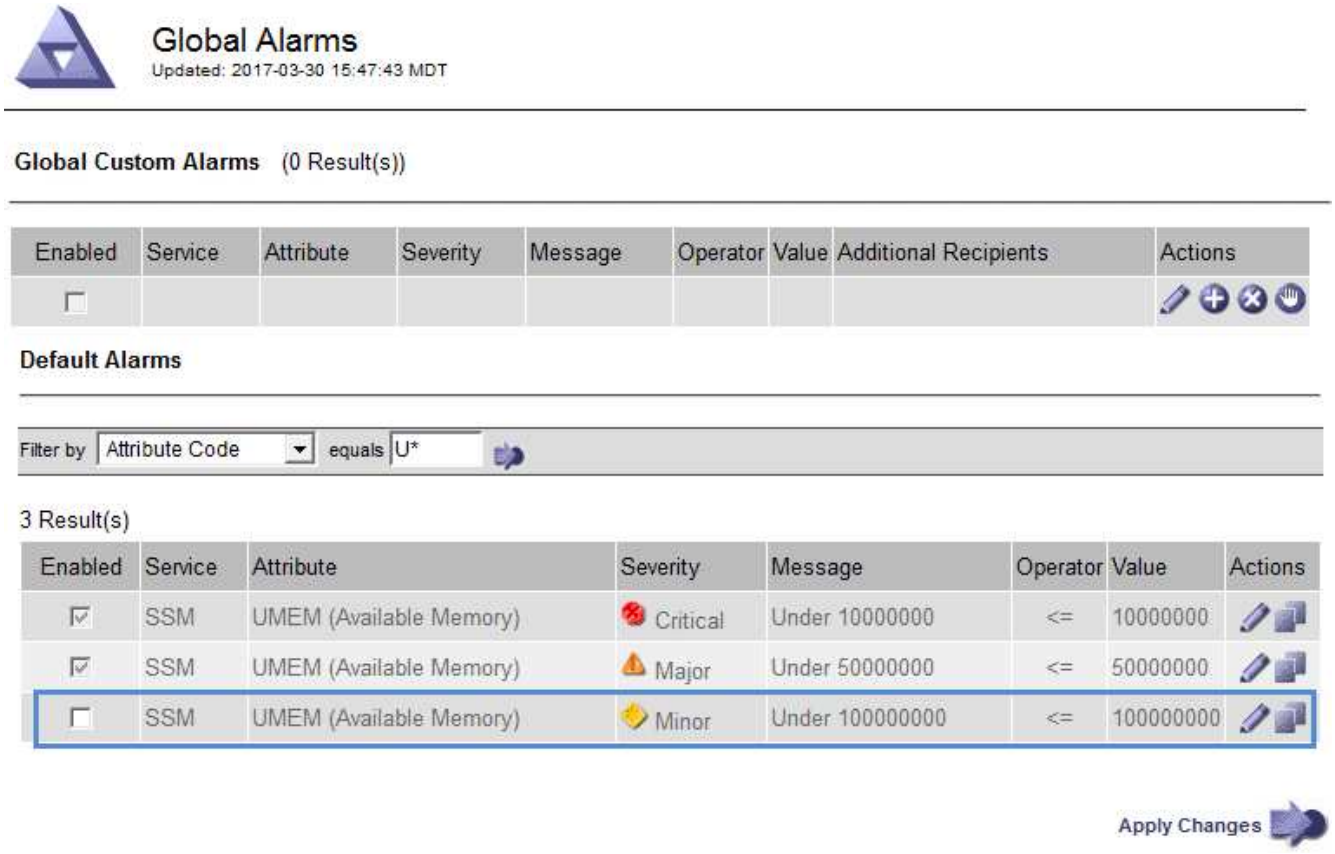
1. Select **SUPPORT** > **Alarms (legacy)** > **Global alarms**.
2. Search for the Default alarm to disable.
   a. In the Default Alarms section, select **Filter by** > **Attribute Code** or **Attribute Name**.
   b. Type a search string.

      Specify four characters or use wildcards (for example, A??? or AB*). Asterisks (*) represent multiple characters, and question marks (?) represent a single character.

   c. Click the arrow, or press **Enter**.

      > Selecting **Disabled Defaults** displays a list of all currently disabled Default alarms.

3. From the search results table, click the Edit icon for the alarm you want to disable.



The **Enabled** check box for the selected alarm becomes active.

4. Unselect the **Enabled** check box.
5. Click **Apply Changes**.

   The Default alarm is disabled.

Disable Global Custom alarms (legacy system)

You can disable a legacy Global Custom alarm for the entire system.

What you'll need

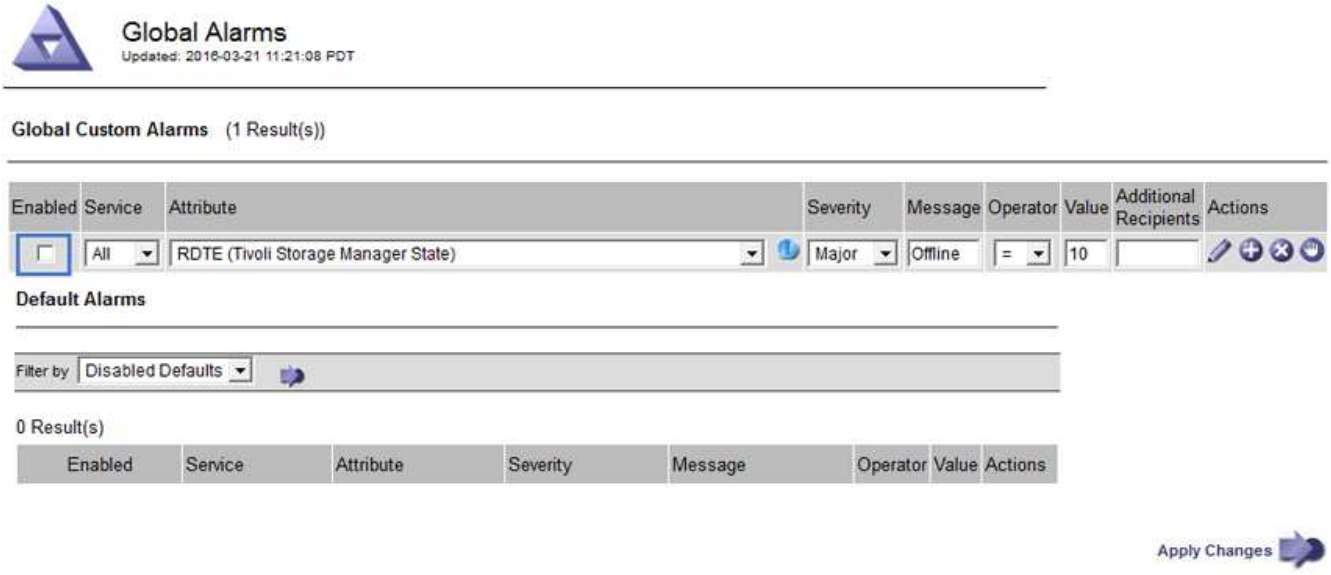
- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.

About this task

Disabling an alarm for an attribute that currently has an alarm triggered does not clear the current alarm. The alarm will be disabled the next time the attribute crosses the alarm threshold, or you can clear the triggered alarm.

Steps

1. Select **SUPPORT** > **Alarms (legacy)** > **Global alarms**.
2. In the Global Custom Alarms table, click **Edit** next to the alarm you want to disable.
3. Unselect the **Enabled** check box.



4. Click **Apply Changes**.

   The Global Custom alarm is disabled.

Clear triggered alarms (legacy system)

If a legacy alarm is triggered, you can clear it instead of acknowledging it.

What you'll need

- You must have the `Passwords.txt` file.

Disabling an alarm for an attribute that currently has an alarm triggered against it does not clear the alarm. The alarm will be disabled the next time the attribute changes. You can acknowledge the alarm or, if you want to immediately clear the alarm rather than wait for the attribute value to change (resulting in a change to the alarm state), you can clear the triggered alarm. You might find this helpful if you want to clear an alarm immediately against an attribute whose value does not change often (for example, state attributes).

1. Disable the alarm.
2. Log in to the primary Admin Node:
   a. Enter the following command: *`ssh admin@primary_Admin_Node_IP`*
   b. Enter the password listed in the `Passwords.txt` file.
   c. Enter the following command to switch to root: `su -`
   d. Enter the password listed in the `Passwords.txt` file.

      When you are logged in as root, the prompt changes from `$` to `#`.
3. Restart the NMS service: `service nms restart`
4. Log out of the Admin Node: `exit`

   The alarm is cleared.

Configure notifications for alarms (legacy system)

StorageGRID system can automatically send email and SNMP notifications when an alarm is triggered or a service state changes.

By default, alarm email notifications are not sent. For email notifications, you must configure the email server and specify the email recipients. For SNMP notifications, you must configure the SNMP agent.

Types of alarm notifications (legacy system)

When a legacy alarm is triggered, the StorageGRID system sends out two types of alarm notifications: severity level and service state.

Severity level notifications

An alarm email notification is sent when a legacy alarm is triggered at a selected severity level:

- Notice
- Minor
- Major
- Critical

A mailing list receives all notifications related to the alarm for the selected severity. A notification is also sent when the alarm leaves the alarm level — either by being resolved or by entering a different alarm severity level.

Service state notifications

A service state notification is sent when a service (for example, the LDR service or NMS service) enters the selected service state and when it leaves the selected service state. Service state notifications are send when a service enters or leaves ones of the following service states:

- Unknown
- Administratively Down

A mailing list receives all notifications related to changes in the selected state.

Configure email server settings for alarms (legacy system)

If you want StorageGRID to send email notifications when a legacy alarm is triggered, you must specify the SMTP mail server settings. The StorageGRID system only sends email; it cannot receive email.

What you'll need

- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.

About this task

Use these settings to define the SMTP server used for legacy alarm email notifications and AutoSupport email messages. These settings are not used for alert notifications.

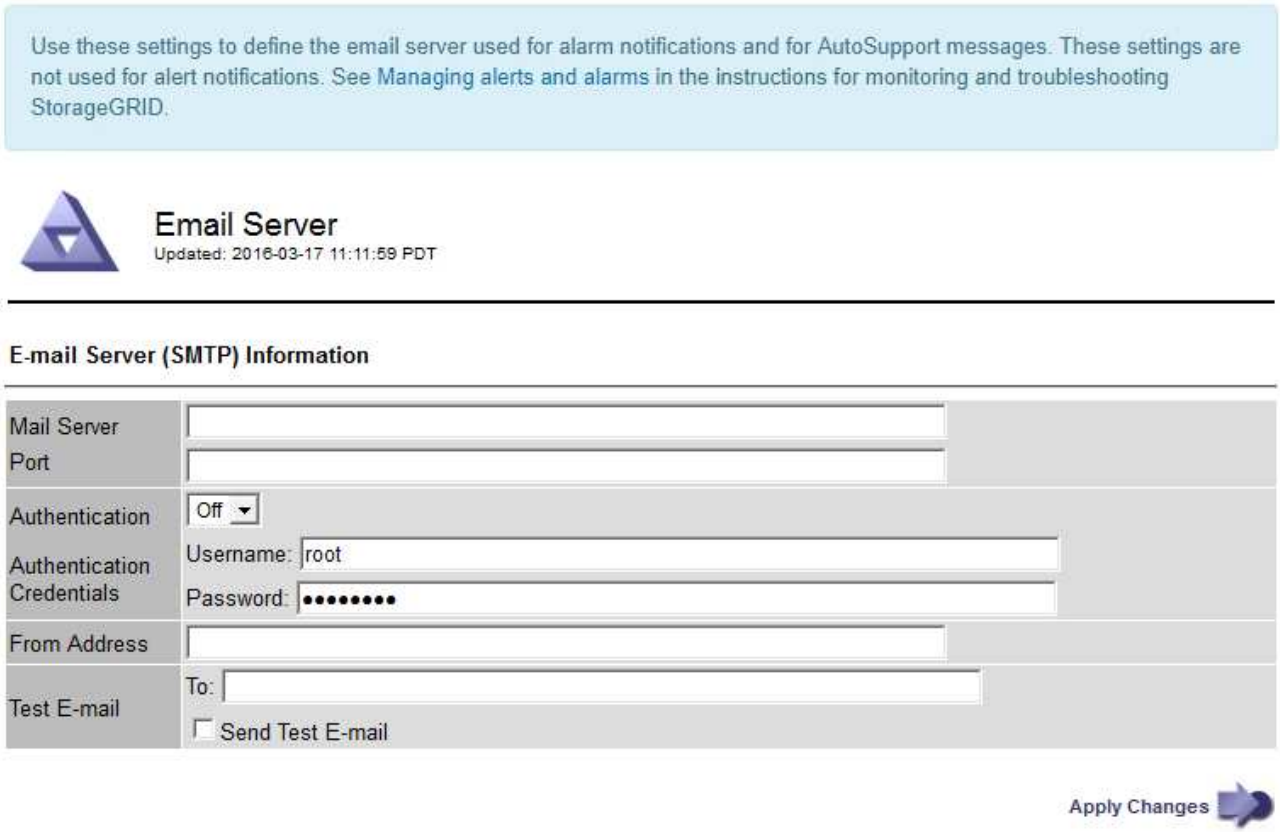
> If you use SMTP as the protocol for AutoSupport messages, you might have already configured an SMTP mail server. The same SMTP server is used for alarm email notifications, so you can skip this procedure. See the instructions for administering StorageGRID.

SMTP is the only protocol supported for sending email.

Steps

1. Select **SUPPORT** > **Alarms (legacy)** > **Legacy email setup**.
2. From the Email menu, select **Server**.

   The Email Server page appears. This page is also used to configure the email server for AutoSupport messages.



3. Add the following SMTP mail server settings:

Item	Description
Mail Server	IP address of the SMTP mail server. You can enter a hostname rather than an IP address if you have previously configured DNS settings on the Admin Node.
Port	Port number to access the SMTP mail server.
Authentication	Allows for the authentication of the SMTP mail server. By default, authentication is Off.
Authentication Credentials	Username and password of the SMTP mail server. If Authentication is set to On, a username and password to access the SMTP mail server must be provided.

4. Under **From Address**, enter a valid email address that the SMTP server will recognize as the sending email address. This is the official email address from which the email message is sent.
5. Optionally, send a test email to confirm that your SMTP mail server settings are correct.
   a. In the **Test E-mail** > **To** box, add one or more addresses that you can access.

      You can enter a single email address or a comma-delineated list of email addresses. Because the NMS service does not confirm success or failure when a test email is sent, you must be able to check the test recipient's inbox.

   b. Select **Send Test E-mail**.
6. Click **Apply Changes**.

   The SMTP mail server settings are saved. If you entered information for a test email, that email is sent. Test emails are sent to the mail server immediately and are not sent through the notifications queue. In a system with multiple Admin Nodes, each Admin Node sends an email. Receipt of the test email confirms that your SMTP mail server settings are correct and that the NMS service is successfully connecting to the mail server. A connection problem between the NMS service and the mail server triggers the legacy MINS (NMS Notification Status) alarm at the Minor severity level.

Create alarm email templates (legacy system)

Email templates let you customize the header, footer, and subject line of a legacy alarm email notification. You can use email templates to send unique notifications that contain the same body text to different mailing lists.

What you'll need

- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.

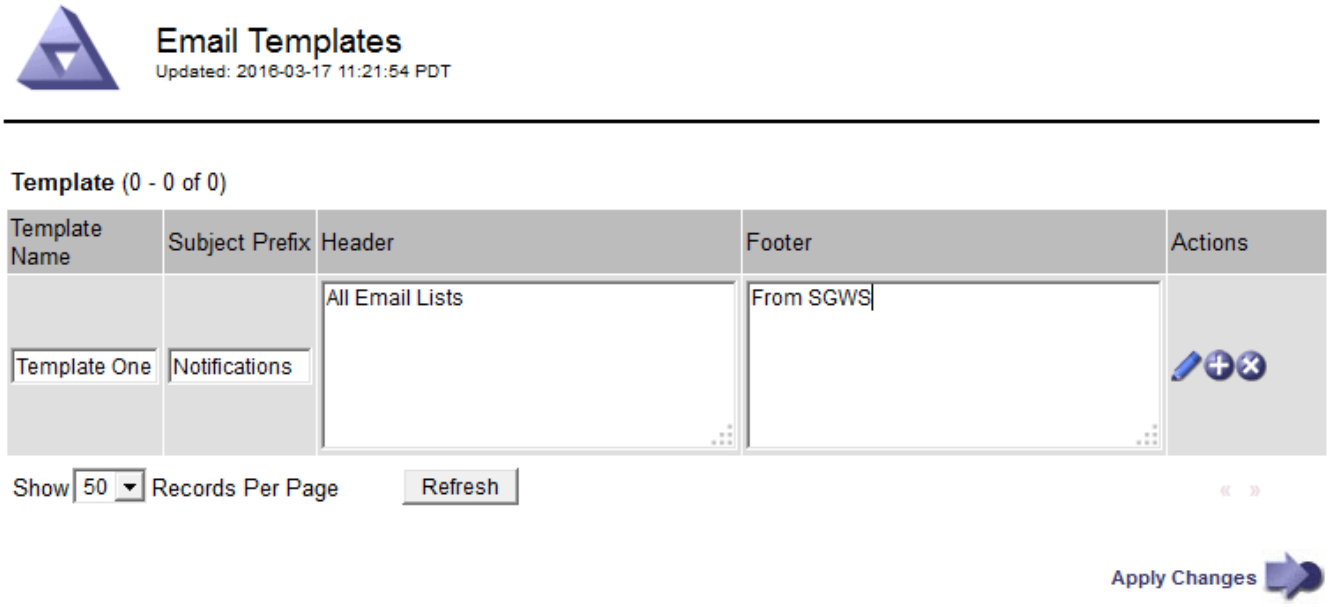
About this task

Use these settings to define the email templates used for legacy alarm notifications. These settings are not used for alert notifications.

Different mailing lists might require different contact information. Templates do not include the body text of the email message.

Steps

1. Select **SUPPORT** > **Alarms (legacy)** > **Legacy email setup**.
2. From the Email menu, select **Templates**.
3. Click **Edit** (or **Insert** if this is not the first template).



4. In the new row add the following:

Item	Description
Template Name	Unique name used to identify the template. Template names cannot be duplicated.
Subject Prefix	Optional. Prefix that will appear at the beginning of an email's subject line. Prefixes can be used to easily configure email filters and organize notifications.
Header	Optional. Header text that appears at the beginning of the email message body. Header text can be used to preface the content of the email message with information such as company name and address.
Footer	Optional. Footer text that appears at the end of the email message body. Footer text can be used to close the email message with reminder information such as a contact phone number or a link to a web site.

5. Click **Apply Changes**.

   A new template for notifications is added.

Create mailing lists for alarm notifications (legacy system)

Mailing lists let you notify recipients when a legacy alarm is triggered or when a service state changes. You must create at least one mailing list before any alarm email notifications can be sent. To send a notification to a single recipient, create a mailing list with one email address.

What you'll need

- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.

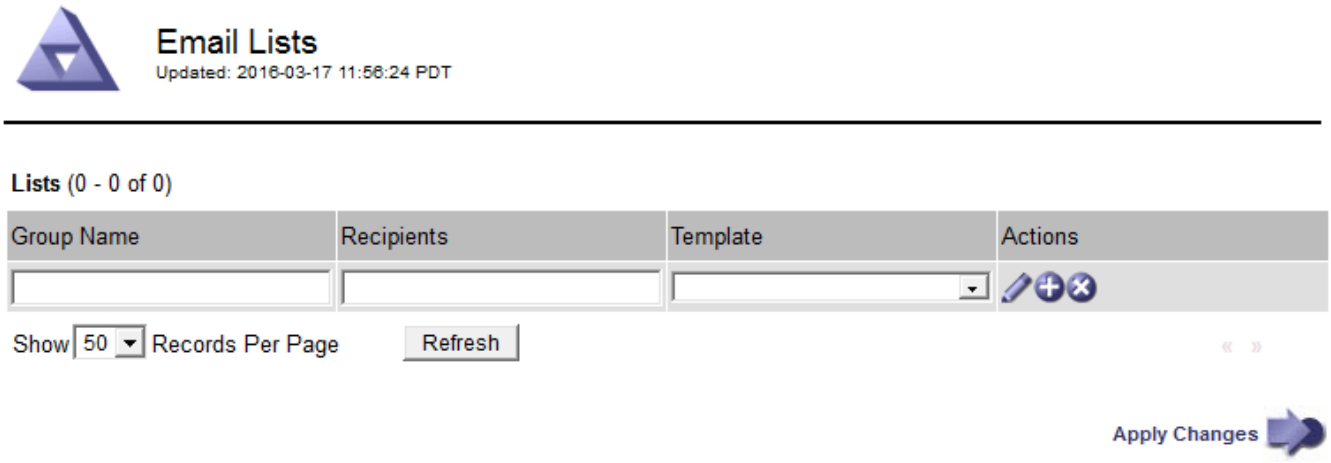
- If you want to specify an email template for the mailing list (custom header, footer, and subject line), you must have already created the template.

About this task

Use these settings to define the mailing lists used for legacy alarm email notifications. These settings are not used for alert notifications.

Steps

1. Select **SUPPORT** > **Alarms (legacy)** > **Legacy email setup**.
2. From the Email menu, select **Lists**.
3. Click **Edit** (or *Insert* if this is not the first mailing list).



4. In the new row, add the following:

Item	Description
Group Name	Unique name used to identify the mailing list. Mailing list names cannot be duplicated. **Note:** If you change the name of a mailing list, the change is not propagated to the other locations that use the mailing list name. You must manually update all configured notifications to use the new mailing list name.
Recipients	Single email address, a previously configured mailing list, or a comma-delineated list of email addresses and mailing lists to which notifications will be sent. **Note:** If an email address belongs to multiple mailing lists, only one email notification is sent when a notification triggering event occurs.
Template	Optionally, select an email template to add a unique header, footer, and subject line to notifications sent to all recipients of this mailing list.

5. Click **Apply Changes**.

   A new mailing list is created.

Configure email notifications for alarms (legacy system)

In order to receive email notifications for the legacy alarm system, recipients must be a member of a mailing list and that list must be added to the Notifications page. Notifications are configured to send email to recipients only when an alarm with a specified severity level is triggered or when a service state changes. Thus, recipients only receive the notifications they need to receive.

What you'll need

- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.
- You must have configured an email list.

About this task

Use these settings to configure notifications for legacy alarms. These settings are not used for alert notifications.

If an email address (or list) belongs to multiple mailing lists, only one email notification is sent when a notification triggering event occurs. For example, one group of administrators within your organization can be configured to receive notifications for all alarms regardless of severity. Another group might only require notifications for alarms with a severity of critical. You can belong to both lists. If a critical alarm is triggered, you receive only one notification.

Steps

1. Select **SUPPORT** > **Alarms (legacy)** > **Legacy email setup**.
2. From the Email menu, select **Notifications**.
3. Click *Edit* (or *Insert* if this is not the first notification).
4. Under E-mail List, select the mailing list.
5. Select one or more alarm severity levels and service states.
6. Click **Apply Changes**.

   Notifications will be sent to the mailing list when alarms with the selected alarm severity level or service state are triggered or changed.

Suppress alarm notifications for a mailing list (legacy system)

You can suppress alarm notifications for a mailing list when you no longer want the mailing list to receive notifications about alarms. For example, you might want to suppress notifications about legacy alarms after you have transitioned to using alert email notifications.

What you'll need

- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.

Use these settings to suppress email notifications for the legacy alarm system. These settings do not apply to alert email notifications.

> While the legacy alarm system continues to be supported, the alert system offers significant benefits and is easier to use.

Steps

1. Select **SUPPORT** > **Alarms (legacy)** > **Legacy email setup**.
2. From the Email menu, select **Notifications**.
3. Click **Edit** next to the mailing list for which you want to suppress notifications.
4. Under Suppress, select the check box next to the mailing list you want to suppress, or select **Suppress** at the top of the column to suppress all mailing lists.
5. Click **Apply Changes**.

   Legacy alarm notifications are suppressed for the selected mailing lists.

Suppress email notifications system wide

You can block the StorageGRID system's ability to send email notifications for legacy alarms and event-triggered AutoSupport messages.

What you'll need

- You must be signed in to the Grid Manager using a supported web browser.
- You must have specific access permissions.

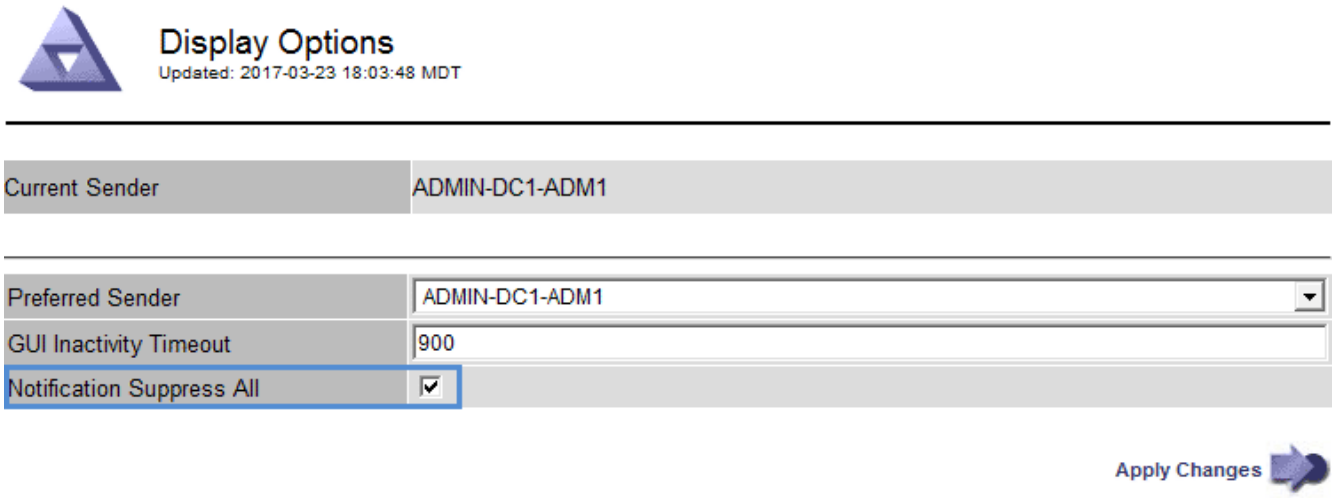
About this task

Use this option to suppress email notifications for legacy alarms and event-triggered AutoSupport messages.

> This option does not suppress alert email notifications. It also does not suppress weekly or user-triggered AutoSupport messages.

Steps

1. Select **CONFIGURATION** > **System settings** > **Display options**.
2. From the Display Options menu, select **Options**.
3. Select **Notification Suppress All**.



4. Click **Apply Changes**.

   The Notifications page (**Configuration** > **Notifications**) displays the following message:

Notifications

Updated: 2016-03-17 14:06:48 PDT

All e-mail notifications are now suppressed.

Notifications (0 - 0 of 0)

	Suppress	Severity Levels				Service States		
E-mail List	☑	Notice	Minor	Major	Critical	Unknown	Administratively Down	Actions
	☐	☐	☐	☐	☐	☐	☐	

Show 50 Records Per Page Refresh

« »

Apply Changes

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