

Administering vRealize Log Insight

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vRealize Log Insight 8.10

You can find the most up-to-date technical documentation on the VMware website at:

<https://docs.vmware.com/>

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Administering vRealize Log Insight

Administering vRealize Log Insight provides information about the administration of VMware[®] vRealize[™] Log Insight[™], including how to manage user accounts and how to configure integration with other VMware products. It also includes information about managing product security and upgrading your deployment.

The information is written for experienced Windows or Linux system administrators who are familiar with virtual machine technology and datacenter operations. Administrators are users associated with the Super Admin role, clones of the Super Admin role, or roles that have permissions for the relevant administrative tasks. These roles are defined in the **Management > Access Control** page, on the **Roles** tab.

Upgrading vRealize Log Insight

1

You can upgrade vRealize Log Insight to version 8.10 from 8.8.x and to 8.8 from 8.6.x. You can upgrade to version 8.4 from 8.3 or 8.2, and to 8.1 from 4.8 or 8.0. To upgrade to the rest of the versions, you must follow an incremental upgrade path. The upgrade includes automatically upgrading the nodes in a cluster.

To download the PAK files for vRealize Log Insight, go to the [Download VMware vRealize Log Insight](#) page.

This chapter includes the following topics:

- [vRealize Log Insight Upgrade Path](#)
- [Upgrade to the Latest Version of vRealize Log Insight](#)
- [vRealize Log Insight 8.1 Upgrade](#)
- [vRealize Log Insight 8.0 Upgrade](#)

vRealize Log Insight Upgrade Path

The upgrade path to follow depends on which version of vRealize Log Insight is installed and the version you are upgrading to.

You can upgrade vRealize Log Insight to version 8.10 from 8.8.x, to 8.8 from 8.6.x, to 8.4 from 8.3 or 8.2, and to 8.1 from 4.8 or 8.0. Upgrades to the rest of the versions must be done incrementally. For example, to upgrade from version 8.1 to 8.3, you apply the 8.2 upgrade to 8.1 and then upgrade from 8.2 to 8.3. You must upgrade to each intermediate release.

You can also view supported upgrade paths on the [VMware Product Interoperability Matrixes](#) site.

Upgrade to the Latest Version of vRealize Log Insight

You can upgrade a cluster to vRealize Log Insight 8.10 from 8.8.x, and to 8.8 from 8.6.x. You can upgrade to version 8.4 from 8.3 or 8.2, and to 8.1 from 4.8 or 8.0. To upgrade a cluster to the rest of the versions, you must follow an incremental path. For example, to upgrade from version 8.1 to 8.3, you apply the 8.2 upgrade to 8.1 and then upgrade from 8.2 to 8.3.

Upgrading vRealize Log Insight must be done from the primary node's FQDN. Upgrading using the Integrated Load Balancer IP address is not supported.

During upgrade, the primary node is upgraded first, and restarts. Each of the cluster nodes is upgraded sequentially. You can see the status of the rolling upgrade on the **Management > Cluster** page. If the integrated load balancer is configured, its IPs are migrated among the cluster nodes so cluster services, including UI, API, and ingestion of incoming events, remain available throughout the rolling upgrade. Low-level details are written to the file `/storage/core/loginsight/var/upgrade.log` on each individual node. A system notification is sent when the upgrade finishes successfully.

If a problem is encountered affecting one or more of the nodes during the upgrade process, the entire cluster is rolled back to the original, working version. Because configuration changes performed after the upgrade started might be inconsistent or invalid, the configuration is reverted to a known-good state captured before upgrade. No ingested events are lost. Progress is written to the file `/storage/core/loginsight/var/rollback.log` on each individual node. A system notification is sent when rollback finishes. After the issue is investigated and fixed, you can retry the upgrade.

After upgrade, all nodes are placed in a connected state and brought online even if they were in maintenance before upgrade.

Prerequisites

- Verify that you are applying the correct upgrade to version vRealize Log Insight . For more information about supported upgrade paths, see [vRealize Log Insight Upgrade Path](#).
- Create a snapshot or backup copy of the vRealize Log Insight virtual appliance.
- Obtain a copy of the vRealize Log Insight upgrade bundle .pak file for the release you are upgrading to.
- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.
- Make a note of any nodes you are upgrading that are in maintenance mode. When the upgrade is finished, you must move them from the state Connected to Maintenance mode.

Procedure

- 1 Expand the main menu and navigate to **Management > Cluster**.
- 2 Click **Upgrade from PAK** to upload the .pak file.
- 3 Accept the new EULA to complete the upgrade procedure.

- 4 vRealize Log Insight participates in VMware's Customer Experience Improvement Program (CEIP).
- If CEIP was activated for the earlier release, no additional change is required during upgrade. CEIP remains activated after the upgrade is finished.
 - If CEIP was not activated for the earlier release, the CEIP check box is displayed when the upgrade is finished, and the check box is selected by default. Deselect the check box to leave the CEIP.

After activating or deactivating CEIP, click **OK**.

What to do next

After the primary node upgrade process is complete, you can view the remaining upgrade process, which is automatic.

Check for the email sent to the Admin to confirm the upgrade completed successfully.

After upgrade, all nodes are brought online even if they were in maintenance mode before the upgrade. Move these nodes back to maintenance mode as needed.

vRealize Log Insight 8.1 Upgrade

You can upgrade from vRealize Log Insight 8.0 to 8.1, where both versions are on Photon operating systems. You can also upgrade directly from vRealize Log Insight 4.8 on an SLES operating system to vRealize Log Insight 8.1 on a Photon operating system.

Upgrading from vRealize Log Insight 8.0 to 8.1

The upgrade from vRealize Log Insight 8.0 to 8.1 does not change the architecture of the virtual machine of the vRealize Log Insight virtual appliance. The only change is in the currently booted root partition, for example, from SDA4 to SDA3, which has no impact on the user experience.

If the upgrade to vRealize Log Insight 8.1 fails, an automated rollback does not happen. However, you can do a manual rollback to revert to an earlier version. For more information, see <https://kb.vmware.com/s/article/75150>. There is no change in the user interface or REST API. When you connect to the vRealize Log Insight 8.1 virtual machine from the command line and work on it, you see `systemd`-based information, as Photon is based on `systemd`.

Upgrading from vRealize Log Insight 4.8 to 8.1

Upgrading from vRealize Log Insight 4.8 to 8.1 is similar to upgrading from 4.8 to 8.0. For more information, see [vRealize Log Insight 8.0 Upgrade](#).

For additional information about upgrading to vRealize Log Insight 8.1, see the [upgrade notes](#).

For information about the upgrade process, see [Upgrade to the Latest Version of vRealize Log Insight](#).

vRealize Log Insight 8.0 Upgrade

You can upgrade from vRealize Log Insight 4.8 on an SLES operating system to vRealize Log Insight 8.0 on a Photon operating system.

Upgrading from an SLES-based vRealize Log Insight 4.8 to a Photon-based vRealize Log Insight 8.0 is different from the previous upgrades because of the change in the underlying operating system. This upgrade changes the architecture of each virtual machine in the vRealize Log Insight virtual appliance.

For example, consider a virtual machine with a disk SDA, which has three partitions for boot (SDA1), swap (SDA2), and root (SDA3). The size of partition SDA3 is approximately 16 GB and it contains information about SLES. Upgrading from an SLES-based vRealize Log Insight 4.8 to a Photon-based vRealize Log Insight 8.0 creates another partition in SDA3 and splits it equally into two parts, sized approximately 8 GB each - one for SLES (SDA3) and another for Photon (SDA4). SDA4 becomes the active partition. SDA3 remains inactive but contains valid vRealize Log Insight information for SLES. You can boot SDA3 by manually selecting it when you boot the virtual machine.

Note Before upgrading from an SLES-based vRealize Log Insight 4.8 to a Photon-based vRealize Log Insight 8.0, ensure that the root partition has enough space for the upgrade. If the root partition is smaller in size, for example, 8 GB, increase the disk size to 20 GB, so that the root partition size increases to 16 GB. You must increase the disk size for each node that has a root partition with less space. For information about increasing the root partition size, see <https://kb.vmware.com/s/article/76304>.

After an upgrade to a Photon-based vRealize Log Insight 8.0:

- There is no change in the user interface or REST API.
- When you connect to the vRealize Log Insight 8.0 virtual machine from the command line and work on it, you see `systemd`-based information, because SLES is based on `initd` whereas Photon is based on `systemd`.

For additional information about upgrading to vRealize Log Insight 8.0, see the [upgrade notes](#).

For information about the upgrade process, see [Upgrade to the Latest Version of vRealize Log Insight](#).

Managing vRealize Log Insight User Accounts

2

You can create user accounts and roles to provide users with access to the vRealize Log Insight web interface.

You can create and edit user accounts if you are a user associated with the Super Admin role or a role that has the **Access control** permission with **Edit** access level. However, you can change your own email and account password without having this permission.

This chapter includes the following topics:

- [User Management Overview](#)
- [Role-Based Access Control](#)
- [Using Filtering to Manage User Accounts](#)
- [Create a User Account](#)
- [Unlock a User Account](#)
- [Configure VMware Identity Manager Access to Active Directory Groups for vRealize Log Insight](#)
- [Import an Active Directory Group to vRealize Log Insight](#)
- [Define a Data Set](#)
- [Create and Modify Roles](#)
- [Delete a User Account or Group](#)

User Management Overview

You can use a combination of user logins, role-based access control, and data sets to manage vRealize Log Insight users. Role-based access control lets you manage users and the tasks that they can perform.

Note You can create and edit user accounts if you are a user associated with the Super Admin role or a role that has the **Access control** permission with **Edit** access level.

Roles are sets of permissions required to perform particular tasks. vRealize Log Insight has a set of predefined roles. Additionally, you can create custom roles as part of defining security policies, and grant the roles to users. To change the permissions and tasks associated with a custom role, you can update the role settings. The updated settings take effect for all users associated with the role.

- To allow a user to perform a task, you grant the role to the user.
- To prevent a user from performing a task, you revoke the role from the user.

Managing roles for each user is based on their user login account. You can assign multiple roles to a user, in which case the role permissions are merged.

Users who cannot view or access certain objects or cannot perform certain operations were not assigned the roles with the permissions to do so.

Role-Based Access Control

Role-based access control lets you restrict log access for specific users, and control tasks that these users can perform after they log in. You can associate or revoke roles with or from user login accounts. A user can see all the dashboards that they have access to, but the data in the dashboards and in Explore Logs is filtered based on the data sets that the user role has access to.

Note You can create and edit user accounts if you are a user associated with the Super Admin role or a role that has the **Access control** permission with **Edit** access level.

Users

You can control the access and actions of each user by granting or revoking roles to or from the login account of the user.

Permissions

Permissions and access levels are associated with roles, and control the allowed actions in vRealize Log Insight. Permissions apply to particular administrative or user tasks in vRealize Log Insight. The predefined roles in vRealize Log Insight have a fixed set of permissions. You can modify these permissions for all predefined roles except the Super Admin role. Additionally, you can also create custom roles and assign permissions with access levels according to your requirement. For example, you can grant the **Management** permission with **Full Access** to allow a user to view and modify the vRealize Log Insight administrative settings in the **Management** section.

Data Sets

Data sets consist of a set of filters. You can use data sets to provide users with access to specific content by associating a data set with a role.

Note You can associate data sets with all predefined roles except the Super Admin role.

Roles

Roles are collections of permissions and data sets that can be associated with users. Roles provide a convenient way to package all the permissions required to perform a task. One user can be assigned multiple roles.

vRealize Log Insight has a set of predefined roles. You can modify all predefined roles except the Super Admin role. You can also create custom roles and modify the associated permissions and data sets according to your requirement.

Using Filtering to Manage User Accounts

You can search for a user or set of users by specifying a search filter.

To use filtering for user accounts, navigate to **Management > Access Control** and select the **Users** tab.

The search text box is located near the top of the page and contains the phrase `Filter by username`.

The search function filters results as you type, returning user names that contain the input pattern. For example, if you have user names `John_Smith`, `John_Doe`, and `Helen_Jonson`, when you type the letter `J`, search returns all user names that include that letter, for this example `John_Smith`, `John_Doe`, and `Helen_Jonson`. When you continue to type letters, search results are narrowed to match the exact pattern. For this example, when you type `John_`, search returns `John_Smith` and `John_Doe`.

You can sort search results by fields: domain, authentication, roles, email, or UPN. In addition, you can perform a bulk action, such as deleting multiple users, on the search result.

Create a User Account

You can create user accounts to provide access to the vRealize Log Insight web user interface.

Prerequisites

- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the **Access control** permission with **Edit** access level. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

- Verify that you have configured VMware Identity Manager or Active Directory support if you are creating user accounts that use either of these types of authentication. See [Activate User Authentication Through VMware Identity Manager](#) and [Activate User Authentication Through Active Directory](#).

Procedure

- 1 Expand the main menu and navigate to **Management > Access Control**.
- 2 Click **Users**.
- 3 Click **New User**.
- 4 Do either of the following:
 - If you are using the default, built-in authentication, enter a user name and an email address.
 - If you are using Active Directory or VMware Identity Manager authentication, enter the domain to which the user belongs, a user name, and optionally, the email address for the user name account.
- 5 From the **Roles** list on the right, select one or more predefined or custom user roles.

Option	Description
Dashboard User	Dashboard users can only use the Dashboards page of vRealize Log Insight.
Super Admin	Super Admin users can access all the functionalities of vRealize Log Insight, can administer vRealize Log Insight, and can manage the accounts of all other users.
User	Users can access all the functionalities of vRealize Log Insight. Users can view log events, run queries to search and filter logs, import content packs into their own user space, view alerts, and manage their own user accounts to change a password or email address. Users do not have access to the administration options and cannot share content with other users, create or modify alerts, modify the accounts of other users, and or install a content pack from the Marketplace. However, they can import a content pack into their own user space which is visible only to them.
View Only Admin	View Only Admin users can view Admin information, have full User access, and can edit shared content.
Custom Role	A user with a custom role can view or modify information based on the permissions associated with the role.

To view the permissions associated with a predefined or custom role, in the **Access Control** page, click the **Roles** tab and then click **Show Permissions** against the role.

6 Click **Save**.

- For built-in authentication, the information is saved locally. An email is sent to the user's email address with a link to finish the registration. The user can click the link and enter a password for their account. Before the user registers their account, the account status is pending. After registration, the account status is active.

Note A user must register their account within 24 hours of receiving the registration email. If they fail to do so, their account status remains pending, and they have to request the Super Admin user to unlock their account. For more information, see [Unlock a User Account](#).

- For authentication with VMware Identity Manager, vRealize Log Insight verifies whether the user's domain is linked to a group. If the domain does not belong to a group, vRealize Log Insight verifies whether the domain has established trust with a domain associated with a group. If cross-domain trust has been established, the user can log in to vRealize Log Insight, and the corresponding user account is added to the user table in **Access Control > Users**.

Unlock a User Account

If a user account is in pending status because of the failure to register within 24 hours or if the account is in locked status, a Super Admin user can unlock the account.

User accounts are locked in either of the following situations:

- The user enters the wrong password three consecutive times in a 15 minute period.
- The user has not logged in to vRealize Log Insight for 35 days. This lock condition is valid only if the password policy restriction is activated.
- The user has not changed their password for 60 days. This lock condition is valid only if the password policy restriction is activated.

For information about enabling the password policy restriction, see [Configure STIG Compliance for vRealize Log Insight](#).

Note This procedure unlocks accounts that use the default, built-in authentication only, and not accounts that use VMware Identity Manager or Active Directory authentication.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the **Access control** permission with **Edit** access level. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Access Control**.

- 2 Click **Users**.
- 3 (Optional) For the locked user account, point to the red lock icon in the **Status** column to know why the account is locked.
- 4 Click the pencil icon against the user name of the account.
- 5 Select the **Reset Password** check box if it is not selected already.
- 6 Click **Save**.

Results

An email is sent to the user's email address with a link to reset their password. The user can click the link and enter a new password for their account.

Note A user must unlock their account within 24 hours of receiving the email. If they fail to do so, they have to request the Super Admin user to unlock their account again.

Configure VMware Identity Manager Access to Active Directory Groups for vRealize Log Insight

You can use Active Directory groups with vRealize Log Insight through VMware Identity Manager single sign-on authentication. Your site must be configured for VMware Identity Manager authentication that is enabled for Active Directory support, and server synchronization must be in place.

You must also import group information to vRealize Log Insight.

A VMware Identity Manager user inherits roles that are assigned to any group the user belongs to in addition to the roles that are assigned to the individual user. For example, you can assign Group A to the role of **View Only Admin** and assign a user to the role of **User**. The same user can also be assigned to Group A. When the user logs in, they inherit the group role with privileges for both the **View Only Admin** and **User** roles.

The group is not a VMware Identity Manager local group, but an Active Directory group that is synchronized with VMware Identity Manager.

Prerequisites

- Verify that you have configured the UPN attribute (userPrincipalName) attribute. It can be configured through the VMware Identity Manager administrator interface at **Identity & Access Management > User Attributes**.
- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the **Access control** permission with **Edit** access level. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.
- Verify that you configured VMware Identity Manager support in vRealize Log Insight. See [Activate User Authentication Through VMware Identity Manager](#)

Procedure

- 1 Expand the main menu and navigate to **Management > Access Control**.
- 2 Click **Users**.
- 3 Scroll to the Directory Groups table and click **New Group**.
- 4 Select **VMware Identity Manager** from the **Type** drop-down menu.

The default domain name that you specified when you configured VMware Identity Manager support appears in the **Domain** text box.

- 5 Change the domain name to the Active Directory name for the group.
- 6 Enter the name of the group that you want to add.
- 7 From the **Roles** list on the right, select one or more predefined or custom user roles.

Option	Description
Dashboard User	Dashboard users can only use the Dashboards page of vRealize Log Insight.
Super Admin	Super Admin users can access all the functionalities of vRealize Log Insight, can administer vRealize Log Insight, and can manage the accounts of all other users.
User	Users can access all the functionalities of vRealize Log Insight. Users can view log events, run queries to search and filter logs, import content packs into their own user space, view alerts, and manage their own user accounts to change a password or email address. Users do not have access to the administration options and cannot share content with other users, create or modify alerts, modify the accounts of other users, and or install a content pack from the Marketplace. However, they can import a content pack into their own user space which is visible only to them.
View Only Admin	View Only Admin users can view Admin information, have full User access, and can edit shared content.
Custom Role	A user with a custom role can view or modify information based on the permissions associated with the role.

To view the permissions associated with a predefined or custom role, in the **Access Control** page, click the **Roles** tab and then click **Show Permissions** against the role.

- 8 Click **Save**.

For authentication, vRealize Log Insight verifies whether the user's domain is linked to a group. If the domain does not belong to a group, vRealize Log Insight verifies whether the domain has established trust with a domain associated with a group. If cross-domain trust has been established, the user can log in to vRealize Log Insight, and the corresponding user account is added to the user table in **Access Control > Users**.

Results

Users that belong to the group that you added can use their VMware Identity Manager account to log in to vRealize Log Insight and have the same level of permissions as the group to which they belong.

Import an Active Directory Group to vRealize Log Insight

Instead of adding individual domain users, you can add domain groups to allow users to log in to vRealize Log Insight.

When you activate AD support in vRealize Log Insight, you configure a domain name and provide a binding user that belongs to the domain. vRealize Log Insight uses the binding user to verify the connection to the AD domain, and to verify the existence of AD users and groups.

The Active Directory groups that you add to vRealize Log Insight must either belong to the domain of the binding user, or to a domain that is trusted by the domain of the binding user.

An Active Directory user inherits roles that are assigned to any group the user belongs to, in addition to the roles that are assigned to the individual user. For example, you can assign GroupA to the role of **View Only Admin** and assign the user Bob to the role of **User**. Bob can also be assigned to GroupA. When Bob logs in, he inherits the group role and has privileges for both the **View Only Admin** and **User** roles.

Prerequisites

- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the **Access control** permission with **Edit** access level. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.
- Verify that you configured AD support. See [Activate User Authentication Through Active Directory](#)

Procedure

- 1 Expand the main menu and navigate to **Management > Access Control**.
- 2 Click **Users**.
- 3 Under Directory Groups, click **New Group**.
- 4 Click Active Directory in the **Type** drop-down menu.

The default domain name that you specified when you configured Active Directory support appears in the **Domain** text box. If you are adding groups from the default domain, do not modify the domain name.

- 5 (Optional) If you want to add a group from a domain that trusts the default domain, type the name of the trusting domain in the **Domain** text box.
- 6 Enter the name of the group that you want to add.

- 7 From the **Roles** list on the right, select one or more predefined or custom user roles.

Option	Description
Dashboard User	Dashboard users can only use the Dashboards page of vRealize Log Insight.
Super Admin	Super Admin users can access all the functionalities of vRealize Log Insight, can administer vRealize Log Insight, and can manage the accounts of all other users.
User	Users can access all the functionalities of vRealize Log Insight. Users can view log events, run queries to search and filter logs, import content packs into their own user space, view alerts, and manage their own user accounts to change a password or email address. Users do not have access to the administration options and cannot share content with other users, create or modify alerts, modify the accounts of other users, and or install a content pack from the Marketplace. However, they can import a content pack into their own user space which is visible only to them.
View Only Admin	View Only Admin users can view Admin information, have full User access, and can edit shared content.
Custom Role	A user with a custom role can view or modify information based on the permissions associated with the role.

To view the permissions associated with a predefined or custom role, in the **Access Control** page, click the **Roles** tab and then click **Show Permissions** against the role.

- 8 Click **Save**.

vRealize Log Insight verifies whether the AD group exists in the domain that you specified or in a trusting domain. If the group cannot be found, a dialog box informs you that vRealize Log Insight cannot verify that group. You can save the group without verification or cancel to correct the group name.

Results

Users that belong to the Active Directory group that you added can use their domain account to log in to vRealize Log Insight and have the same level of permissions as the group to which they belong.

Define a Data Set

You can define a data set to provide users access to specific content.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the **Access control** permission with **Edit** access level. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Access Control**.
- 2 Click **Data Sets**.
- 3 Click **New Data Set**.
- 4 Enter a name and description for the data set.
- 5 Click **Add Filter**.

Tip The **This data set restricts other data sets** check box determines how a data set should behave when combined with other data sets. For example, you have two data sets:

Data set 1:

```
hostname contains "host"
appname contains "app"
```

Data set 2:

```
severity contains "error"
```

If both of these data sets are added to a role, the resulting combined data set would be:

```
(hostname contains "host" AND appname contains "app") OR (severity contains "error")
```

However, if you select the **This data set restricts other data sets** check box for data set 2, the combined data set would be:

```
(hostname contains "host" AND appname contains "app") AND (severity contains "error")
```

- 6 Use the first drop-down menu to select a field defined within vRealize Log Insight to filter on. For example, **hostname**.

The list contains static fields only and excludes fields that are extracted, user shared, and fields created through event_type filters.

Note Numeric fields contain the additional operators =, >, <, >=, and <=, which string fields do not. These operators perform numeric comparisons. Using them yields different results than using string operators. For example, the filter **response_time = 02** matches an event that contains a **response_time** field with a value 2. The filter **response_time contains 02** does not have the same match.

- 7 Use the second drop-down menu to select the operation to apply to the field selected in the first drop-down menu. For example, select **contains**. The **contains** filter matches full tokens: searching for the string `err` does not result in `error` as a match.

- 8 In the filter box to the right of the filter drop-down menu, enter the value that you want to use as a filter.

You can use multiple values. The operator between these values is OR. If you are using the `_index` field in one of the filters, the operator is AND.

Note The box is not available if you select the **exists** operator in the second drop-down menu.

- 9 (Optional) To add more filters, click **Add Filter**.
- 10 (Optional) To verify that the filter behavior is what you want, click **Run in Explore Logs page**, which opens an Explore Logs window with data that matches your filters.
- 11 Click **Save**.

What to do next

Associate a data set with a user role. See [Create and Modify Roles](#).

Create and Modify Roles

You can create or modify roles to allow users to perform certain tasks and access specific content.

Note You can edit all predefined roles except the Super Admin role. You can clone the Super Admin role and then modify the cloned role.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the **Access control** permission with **Edit** access level. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Access Control**.
- 2 Click **Roles**.
- 3 Click **New Role** or the pencil icon to edit an existing role.
- 4 Modify the **Name** and **Description** text boxes.
- 5 Select one or more permissions and their corresponding access levels from the **Permissions** list. Permissions have main categories and sub-categories within each main category.

The following access levels are available:

Full Access

Provides view and edit access to all the sub-categories for a permission. For example, if you select the **Full Access** check box against the **Management** permission, the users associated with the role can view and edit clusters, hosts, agents, and the rest of the sub-categories under Management.

No Access

Does not provide view or edit access to the corresponding sub-category in a permission.

View

Provides view access to the corresponding sub-category in a permission.

Edit

Provides view and edit access to the corresponding sub-category in a permission.

Note Some permissions do not have all access levels due to absence of use cases. For example, you do not have the **Edit** access level for content pack dashboards. Similarly, you do not have the **No Access** access level for extracted fields in Explore Logs.

The following permissions are available:

Permission	Description
Management	<p>Can view or modify information corresponding to the selected sub-categories, under the Management section:</p> <ul style="list-style-type: none"> ■ System monitor ■ Cluster ■ Access control ■ Hosts ■ Agents ■ Certificates ■ Licenses
Configuration	<p>Can view or configure information corresponding to the selected sub-categories, under the Configuration section:</p> <ul style="list-style-type: none"> ■ General Configuration ■ Authentication Configuration ■ Time Configuration ■ SMTP Configuration ■ SSL Configuration ■ Proxy Configuration
Log Management	<p>Can view or manage information corresponding to the selected sub-categories, in the Log Management page:</p> <ul style="list-style-type: none"> ■ Log Masking ■ Log Filtering ■ Log Forwarding ■ Index Partitions

Permission	Description
Integrations	Can view or configure the integration of vRealize Log Insight with the products corresponding to the selected sub-categories, under the Integration section: <ul style="list-style-type: none"> ■ vSphere Integration ■ vROps (vRealize Operations)) Integration ■ NSX Integration ■ Cloud Integration
Content Packs	Can view or manage content packs in the Content Packs page.
Alerts	Can view, create, or modify alerts in the Alerts page or perform alert-related activities from the Explore Logs page.
Explore Logs	Can view or modify information corresponding to the selected sub-categories in the Explore Logs page: <ul style="list-style-type: none"> ■ Explore Logs ■ Extracted Fields ■ Export
Dashboards	Can view or modify information corresponding to the selected sub-categories in the Dashboards page: <ul style="list-style-type: none"> ■ User Dashboards ■ Shared Dashboards ■ Content Pack Dashboards ■ Shared Dashboard URLs ■ Scheduled Reports

6 (Optional) From the **Data Sets** list, select a data set to associate with the user role.

7 Click **Save**.

Results

The role appears in the **Roles** tab of the **Access Control** page, with information such as name, description, data sets, and so on.

- To view the user accounts associated with any role, click **Show Users** against the role.
- To view the permissions associated with any role, click **Show Permissions** against the role.

What to do next

You can associate a user account or group with the role. For more information, see:

- [Create a User Account](#)
- [Configure VMware Identity Manager Access to Active Directory Groups for vRealize Log Insight](#)
- [Import an Active Directory Group to vRealize Log Insight](#)

Delete a User Account or Group

You can delete user accounts or groups from the vRealize Log Insight user interface.

User accounts and groups are listed in separate tables on the Access Control page. You can use a search filter to find specific user accounts. When you delete a group, all users that belong to the group lose the privileges given to them by the group.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the **Access control** permission with **Edit** access level. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Access Control**.
- 2 Click **Users**.
- 3 Select the check box beside the user name or group that you want to delete.
- 4 To remove the account or group, click **X DELETE** at the top of the User Account or Groups table.

Configuring Authentication

3

You can use several authentication methods with your deployment.

Authentication methods include local authentication, VMware Identity Manager authentication, and Active Directory authentication. You can use more than one method in the same deployment and users then select the type of authentication to use at login.

The download page for vRealize Log Insight includes a download link for the appropriate version of VMware Identity Manager. VMware Identity Manager includes the following features.

- Directory integration to authenticate users against existing directories such as Active Directory or LDAP.
- Single Sign-On integration with other VMware products that also support Single Sign-On capability.
- Single Sign-On with several third-party identity providers such as ADFS, Ping Federate, and others.
- Two-factor authentication through integration with third-party software such as RSA SecurID, Entrust, and others. Two-factor authentication with VMware Verify is included.

For more information, see the [VMware Identity Manager documentation](#).

Local authentication is a component of vRealize Log Insight. To use it, you create a local user and password that is stored on the vRealize Log Insight server. A product administrator must activate vRealize Log Insight and Active Directory.

This chapter includes the following topics:

- [Activate User Authentication Through VMware Identity Manager](#)
- [Activate User Authentication Through Active Directory](#)

Activate User Authentication Through VMware Identity Manager

When activated, VMware Identity Manager authentication can be used with vRealize Log Insight.

With VMware Identity Manager authentication, users can use a single sign-on for all VMware products that use the same Identity Manager.

Active Directory users can also authenticate through VMware Identity Manager when the Active Directory and VMware Identity Manager servers are synchronized. See VMware Identity Manager documentation for more information about synchronization.

Integration with VMware Identity Manager can be done only with local users. Active Directory users who are assigned a tenant admin role in VMware Identity Manager are not eligible for integration with vRealize Log Insight.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Configuration > Authentication**.
- 2 Select **Enable Single Sign-On**.
- 3 In the **Host** text box, enter a host identifier for the VMware Identity Manager instance to use for authenticating users .

For example, **company-name.vmwareidentity.com**.
- 4 In the **API Port** text box, specify the port to use to connect to the VMware Identity Manager instance. The default is 443.
- 5 Optionally, enter the VMware Identity Manager tenant. This is required only if tenant mode is configured as tenant-in-path in VMware Identity Manager.
- 6 Specify VMware Identity Manager user credentials in the **Username** and **Password** text boxes.

This information is used only once during configuration for creating a vRealize Log Insight client on VMware Identity Manager and is not stored locally in vRealize Log Insight. The user must have permission to run API commands against the tenant.

- 7 Click **Test Connection** to verify that the connection works.
- 8 If the VMware Identity Manager instance provides an untrusted SSL certificate, a dialog box appears with the details of the certificate. Click **Accept** to add the certificate to the truststores of all the nodes in the vRealize Log Insight cluster.

If you click **Cancel**, the certificate is not added to the truststores and the connection with the VMware Identity Manager instance fails. You must accept the certificate for a successful connection.

- 9 In the **Redirect URL Host** drop-down menu, select the Hostname or IP to be used in Redirect URL for registering on VMware Identity Manager.

If at least one virtual IP is defined for the Integrated Load Balancer, VMware Identity Manager redirects to the VIP selected. If the Integrated Load Balancer is not configured, the primary node's IP address is used instead.

- 10 Select whether to allow log in support for Active Directory users through VMware Identity Manager.

You can use this option for Active Directory users when VMware Identity Manager is synchronized with that Active Directory instance.

- 11 Click **Save**.

If you did not test the connection and the VMware Identity Manager instance provides an untrusted certificate, follow the instructions in step 9.

Activate User Authentication Through Active Directory

You can authenticate users through Active Directory to simplify the log in process by letting users use a common password for multiple purposes.

Child domain access is not supported through Active Directory. This type of access is supported through VMware Identity Manager only.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Configuration > Authentication**.
- 2 Select **Enable Active Directory support**.
- 3 In the **Default Domain** text box, type a domain name.

For example, **company-name.com**.

Note You cannot list multiple domains in the default domain text box. If the default domain that you specify is trusted by other domains, vRealize Log Insight uses the default domain and the binding user to verify Active Directory users and groups in the trusting domains. Child-domain access with Active Directory is unsupported.

If you switch to a different domain that already includes users and groups, the authentication fails for the existing users and groups, and data saved by the existing users is lost.

- 4 If you have geo-located or security-restricted domain controllers, manually specify the domain controllers closest to this vRealize Log Insight instance.

Note Load-balanced Active Directory authorization servers are not supported.

- 5 Enter the credentials of a binding user that belongs to the default domain.
vRealize Log Insight uses the default domain and the binding user to verify AD users and groups in the default domain, and in domains that trust the default domain.
- 6 Specify values for the connection type.
This connection is used for Active Directory authentication.
- 7 Click **Test Connection** to verify that the connection works.
- 8 If the Active Directory server provides an untrusted SSL certificate, a dialog box appears with the details of the certificate. Click **Accept** to add the certificate to the truststores of all the nodes in the vRealize Log Insight cluster.

If you click **Cancel**, the certificate is not added to the truststores and the connection with the Active Directory server fails. You must accept the certificate for a successful connection.
- 9 Click **Save**.

If you did not test the connection and the Active Directory server provides an untrusted certificate, follow the instructions in step 9.

What to do next

Give permissions to Active Directory users and groups to access the current instance of vRealize Log Insight.

Configure the Protocol to Use for Active Directory

You can configure the protocol to use when connecting to Active Directory. By default, when vRealize Log Insight connects to Active Directory, it first tries SSL LDAP, and then non-SSL LDAP if necessary.

If you want to limit the Active Directory communication to one particular protocol, or want to change the order of protocols that are tried, you must apply additional configurations in the vRealize Log Insight virtual appliance.

Prerequisites

- Verify that you have the root user credentials to log in to the vRealize Log Insight virtual appliance.
- To enable SSH connections, verify that TCP port 22 is open.

Procedure

- 1 Establish an SSH connection to the vRealize Log Insight virtual appliance and log in as the root user.

- 2 Navigate to the following location: `/storage/core/loginsight/config`
- 3 Locate the latest configuration file where [number] is the largest: `/storage/core/loginsight/config/loginsight-config.xml#[number]`
- 4 Copy the latest configuration file: `/storage/core/loginsight/config/loginsight-config.xml#[number]`
- 5 Increase the [number] and save to the following location: `/storage/core/loginsight/config/loginsight-config.xml#[number + 1]`
- 6 Open the file for editing.
- 7 In the `Authentication` section, add the line that corresponds to the configuration that you want to apply:

Option	Description
<code><ad-protocols value="LDAP" /></code>	For specifically using LDAP without SSL
<code><ad-protocols value="LDAPS" /></code>	For specifically using LDAP with SSL only
<code><ad-protocols value="LDAP,LDAPS" /></code>	For specifically using LDAP first and then using LDAP with SSL.
<code><ad-protocols value="LDAPS,LDAP" /></code>	For specifically using LDAPS first and then using LDAP without SSL

When you do not select a protocol, vRealize Log Insight attempts to use LDAP first, and then uses LDAP with SSL.

- 8 Save and close the file.
- 9 Run the `service loginsight restart` command.

Configuring vRealize Log Insight

4

You can configure and customize vRealize Log Insight to change default settings, network settings, and modify storage resources. You can also configure system notifications.

This chapter includes the following topics:

- vRealize Log Insight Configuration Limits
- Add a Log Filter Configuration
- Add a Log Mask Configuration
- Configuring Virtual Appliance Settings
- Assign a License to vRealize Log Insight
- Log Storage Policy
- Managing System Notifications
- Add a vRealize Log Insight Log Forwarding Destination
- Configure Log Forwarding to vRealize Log Insight Cloud
- Synchronize the Time on the vRealize Log Insight Virtual Appliance
- Configure the SMTP Server for vRealize Log Insight
- Configure an HTTP Proxy
- Configure a Webhook
- Install a Custom SSL Certificate
- View and Remove SSL Certificates
- Change the Default Timeout Period for vRealize Log Insight Web Sessions
- Retention and Archiving
- Restart the vRealize Log Insight Service
- Power off the vRealize Log Insight Virtual Appliance
- Download a vRealize Log Insight Support Bundle
- Join or Leave the VMware Customer Experience Improvement Program
- Configure STIG Compliance for vRealize Log Insight

- [Activate FIPS for vRealize Log Insight](#)

vRealize Log Insight Configuration Limits

When you configure vRealize Log Insight, you must stay at or below the supported maximums.

Table 4-1. vRealize Log Insight Configuration Maximums

Item	Maximum
Node Configuration	
CPU	16 vCPUs
Memory	32 GB
Storage device (vmdk)	2 TB - 512 bytes
Total addressable storage	4 TB (+ OS drive) A maximum of 4 TB addressable log storage on Virtual Machine Disks (VMDKs) with a maximum size of 2 TB each. You can have two 2 TB VMDKs or four 1 TB VMDKs, and so on. When you reach the maximum, you must scale outward with a larger cluster size instead of adding more disks to existing VMs.
Syslog connections	750
Cluster Configuration	
Nodes	18 (Primary + 17 Workers)
Virtual IP addresses	60
Ingestion per Node	
Events per second	15,000 eps
Syslog message length	10 KB (text field)
Ingestion API HTTP POST request	16 KB (text field); 4 MB per HTTP Post request
Integrations	
vRealize Operations	1
vSphere vCenter Server	15 per node
Cloud Channel	1
Active Directory domains	1
Email servers	1
DNS servers	2
NTP servers	4
Forwarders	10

Table 4-1. vRealize Log Insight Configuration Maximums (continued)

Item	Maximum
Index Partition Configuration	
Index partitions	5

Add a Log Filter Configuration

You can add a configuration to drop logs that match the filter criteria you provide.

Dropping logs lets you view only the logs that you require, which is cost-effective, saves storage, and improves performance.

Note

- A log filter configuration is applied only to the logs that are ingested after you create and activate the configuration.
- A log filter configuration is applied only to logs with static fields in the filter criteria.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu, click **Log Management** and then click **Log Filtering**.
- 2 Click **+New Configuration**.
- 3 Enter a unique name for the log filter configuration.
- 4 Select fields and constraints to define the logs that you want to drop. If you do not select a filter, all the logs are dropped. To see the results of your filter, click **Run in Explore Logs page**.

Operator	Description
Matches	Finds strings that match the string and wildcard specification, where * means zero or more characters and ? means zero or any single character. Prefix and postfix globbing is supported. For example, *test* matches strings such as test123 or my-test-run .
does not match	Excludes strings that match the string and wildcard specification, where * means zero or more characters and ? means zero or any single character. Prefix and postfix globbing is supported. For example, test* excludes test123 , but not mytest123 . ?test* excludes test123 and xtest123 , but not mytest123 .

Operator	Description
starts with	Finds strings that start with the specified character string. For example, test finds test123 or test , but not my-test123 .
does not start with	Excludes strings that start with the specified character string. For example, test filters out test123 , but not my-test123 .

- The log filter configuration is activated by default. To deactivate the configuration, click the **Enabled** toggle button.
- To activate log forwarding for the logs that match the filter criteria, click the **Allow Forwarding** toggle button.

When you click the toggle button and save this configuration, the logs matching the filter criteria are no longer ingested into the current vRealize Log Insight instance. Instead, they are sent to the log forwarding or cloud forwarding destination that has the same filter criteria as your log filter configuration.

You can configure a log forwarding destination in **Log Management > Log Forwarding** and a cloud forwarding destination in **Log Management > Cloud Forwarding**.

- Click **Save**.

Results

The log filter configuration appears in the **Log Filtering** tab with information about the drop filter and whether it is activated. You can activate or deactivate the configuration by clicking the **Enabled** toggle button.

Add a Log Mask Configuration

You can add a configuration to mask sensitive information in all logs or logs that match the filter criteria you provide.

Note

- A log mask configuration is applied only to the logs that are ingested after you create and activate the configuration.
- A log mask configuration is applied only to logs in which the *FieldName* field and the filter criteria have static fields.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu, click **Log Management** and then click **Log Masking**.
- 2 Click **+New Configuration**.
- 3 Enter a unique name for the log mask configuration.
- 4 In the **Field Name** drop-down menu, select the field that you want to mask in the logs.
- 5 In the **Selector** text box, enter the regex selector for the field value, which indicates the part of the field that you want to mask.

You must express this value as a capture group in the regex. Capture groups are identified with enclosed parentheses (). You can have multiple capture groups inside a selector. To mask all the content for a specified field, you can set the selector as (. *).

- 6 In the **Mask Value** text box, enter a value to replace the masked content of the specified fields, the default value for which is an empty string.
- 7 Click **+Add Filter** to define the logs for which you want to mask information. If you do not add a filter, all the logs are masked. To see the results of your filter, click **Run in Explore Logs page**.

Operator	Description
Matches	Finds strings that match the string and wildcard specification, where * means zero or more characters and ? means zero or any single character. Prefix and postfix globbing is supported. For example, *test* matches strings such as test123 or my-test-run .
does not match	Excludes strings that match the string and wildcard specification, where * means zero or more characters and ? means zero or any single character. Prefix and postfix globbing is supported. For example, test* excludes test123 , but not mytest123 . ?test* excludes test123 and xtest123 , but not mytest123 .
starts with	Finds strings that start with the specified character string. For example, test finds test123 or test , but not my-test123 .
does not start with	Excludes strings that start with the specified character string. For example, test filters out test123 , but not my-test123 .

- 8 The log mask configuration is activated by default. To deactivate the configuration, click the **Enabled** toggle button.
- 9 Click **Save**.

Results

The log mask configuration appears in the **Log Masking** tab with information about whether it is activated, the logs to which it is applied, and so on. You can activate or deactivate the configuration by clicking the **Enabled** toggle button.

Configuring Virtual Appliance Settings

You can modify virtual appliance settings, including storage capacity and memory or CPU capacity.

Configure the Root SSH Password for the vRealize Log Insight Virtual Appliance

You can configure the root SSH password from the VMware Remote Console or when you deploy the vRealize Log Insight virtual appliance.

By default, the SSH connection to the vRealize Log Insight virtual appliance is activated. To SSH to the virtual instance, you must configure the root password.

As a best practice, you must also set the root SSH password when you deploy the vRealize Log Insight .ova file. For more information, see [Deploy the vRealize Log Insight Virtual Appliance](#).

To activate SSH and set the root password from the VMware Remote Console, perform the following steps:

Prerequisites

Verify that the vRealize Log Insight virtual appliance is deployed and running.

Procedure

- 1 In the vSphere Client inventory, click the vRealize Log Insight virtual appliance, and open the **Console** tab.
- 2 Go to a command line by following the key combination specified on the splash screen.
- 3 In the console, type `root`, and press `Enter`. Leave the password empty and press `Enter` again.

The following message is displayed in the console: `Password change requested. Choose a new password.`

- 4 Leave the old password empty and press `Enter`.
- 5 Type a new password for the root user, press `Enter`, type the new password again for the root user, and press `Enter` again.

The password must consist of at least eight characters, and must include at least one upper case letter, one lower case letter, one digit, and one special character. You cannot repeat the same character more than four times.

Results

The following message is displayed: `Password changed.`

What to do next

You can use the root password to establish SSH connections to the vRealize Log Insight virtual appliance.

To troubleshoot issues in configuring the root SSH password, see the KB articles:

- <https://kb.vmware.com/s/article/53649>
- <https://kb.vmware.com/s/article/90831>

Change the Network Settings of the vRealize Log Insight Virtual Appliance

You can change the network settings of the vRealize Log Insight virtual appliance by following the steps described in <https://kb.vmware.com/s/article/87992> and <https://kb.vmware.com/s/article/91258>.

Note In a multi-node cluster, you must perform operations such as shutting down, adding storage, and restarting, on one node at a time.

Increase the Storage Capacity of the vRealize Log Insight Virtual Appliance

You can increase the storage resources allocated to vRealize Log Insight as your needs grow.

To increase the storage space of a vRealize Log Insight virtual appliance, you must add a new virtual disk to the virtual appliance. This is the only supported option.

Instead of adding numerous smaller disks, it is recommended that you add fewer large disks of up to 4 TB (+ OS drive) total addressable storage. The total can be a combination of two 2-TB disks, or four 1-TB disks, and so on. To learn more, see [vRealize Log Insight Configuration Limits](#).

Note

- You must add the same amount of storage to each node in a vRealize Log Insight cluster.
 - In a multi-node cluster, you must perform operations such as shutting down, adding storage, and restarting, on one node at a time.
-

Prerequisites

- Log in to the vSphere Client as a user who has privileges to modify the hardware of virtual machines in the environment.
- Shut down the vRealize Log Insight virtual appliance safely. See [Power off the vRealize Log Insight Virtual Appliance](#)

Procedure

- 1 In the vSphere Client inventory, right-click the vRealize Log Insight virtual machine and select **Edit Settings**.

- 2 On the **Hardware** tab, click **Add**.
- 3 Select **Hard Disk** and click **Next**.
- 4 Select **Create a new virtual disk** and click **Next**.

- a Type the disk capacity.

vRealize Log Insight supports virtual hard disks of up to 2 TB. If you need more capacity, add more than one virtual hard disk.

- b Select a disk format.

Option	Description
Thick Provision Lazy Zeroed	Creates a virtual disk in the default thick format. The space required for the virtual disk is allocated when the virtual disk is created. The data residing on the physical device is not erased during creation, but is zeroed out on demand later, after first write from the virtual appliance.
Thick Provision Eager Zeroed	Creates a type of thick virtual disk that supports clustering features such as Fault Tolerance. The space required for the virtual disk is allocated at creation time. In contrast to the flat format, the data residing on the physical device is zeroed out when the virtual disk is created. It might take much longer to create disks in this format than to create other types of disks. Create thick provisioned eager zeroed disks whenever possible for better performance and operation of the vRealize Log Insight virtual appliance.
Thin Provision	Creates a disk in thin format. Use this format to save storage space.

- c (Required) To select a datastore, browse for the datastore location and click **Next**.

- 5 Accept the default virtual device node and click **Next**.
- 6 Review the information and click **Finish**.
- 7 Click **OK** to save your changes and close the dialog box.

Results

When you power on the vRealize Log Insight virtual appliance, the virtual machine discovers the new virtual disk and automatically adds it to the default data volume. Completely power off the virtual machine first. For information about powering on virtual appliances, see <https://www.vmware.com/support/pubs/vsphere-esxi-vcenter-server-6-pubs.html>.

Caution After you add a disk to the virtual appliance, you cannot remove it safely. Removing disks from the vRealize Log Insight virtual appliance may result in complete data loss.

Add Memory and CPU to the vRealize Log Insight Virtual Appliance

You can change the amount of memory and CPUs allocated to a vRealize Log Insight virtual appliance after deployment.

You might need to adjust resource allocation if, for example, the number of events in your environment increases.

Note In a multi-node cluster, you must perform operations such as shutting down, adding storage, and restarting, on one node at a time.

Prerequisites

- Log in to the vSphere Client as a user who has privileges to modify the hardware of virtual machines in the environment.
- Shut down the vRealize Log Insight virtual appliance safely. See [Power off the vRealize Log Insight Virtual Appliance](#)

Procedure

- 1 In the vSphere Client inventory, right-click the vRealize Log Insight virtual machine and select **Edit Settings**.
- 2 On the **Hardware** tab, click **Add**.
- 3 Adjust the amount of CPU and memory as needed.
- 4 Review the information and click **Finish**.
- 5 Click **OK** to save your changes and close the dialog box.

Results

When you power on the vRealize Log Insight virtual appliance, the virtual machine begins to utilize the new resources.

Assign a License to vRealize Log Insight

You can use vRealize Log Insight only with a valid license key.

You obtain an evaluation license when you download vRealize Log Insight from the VMware website. This license is valid for 60 days. When the evaluation license expires, you must assign a permanent license to continue using vRealize Log Insight.

The vRealize Log Insight Operating System Instance (OSI) license model defines an OSI as a single installation of an operating system on a non-virtualized physical server or virtual machine. For vRealize Log Insight, an OSI can also be a single system identified by an IP address such as virtualized physical servers, storage arrays, or network devices that can generate log messages.

When a host, server or other source stops sending logs to vRealize Log Insight, the OSI count on the License page is unchanged during the retention period. The retention period is based on license use calculated as the average of the OSI count over the last three months.

You use the Management section of the vRealize Log Insight web user interface to check the vRealize Log Insight licensing status and manage your licenses.

As part of solution interoperability, VMware NSX users on Standard, Advanced, or Enterprise editions can license vRealize Log Insight with their NSX license key. For more information, consult VMware NSX documentation.

Prerequisites

- Obtain a valid license key from My VMware™.
- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > License**.
- 2 In the **License Key** text box, enter your license key and click **Set Key**. If you have a VMware NSX license key, enter it here.
- 3 Verify that the license status is Active, and the license type and expiry day are correct.

Log Storage Policy

The vRealize Log Insight virtual appliance uses a minimum of 100 GB of storage for incoming logs.

When the volume of logs imported into vRealize Log Insight reaches the storage limit, old log messages are automatically and periodically retired on a first-come-first-retired basis. You can increase the storage limit by adding more storage to the vRealize Log Insight virtual appliance. See [Increase the Storage Capacity of the vRealize Log Insight Virtual Appliance](#).

To preserve old messages, you can enable the archiving feature of vRealize Log Insight. See [Data Archiving](#).

Data stored by vRealize Log Insight is immutable. After a log has been imported, it cannot be removed until it is automatically retired.

Managing System Notifications

vRealize Log Insight provides built-in system notifications about activity related to vRealize Log Insight health, such as when disk space is almost exhausted and old log files are about to be deleted.

System notifications inform you of critical issues that require immediate attention, provide you with warnings that might require a response, and inform you of normal system activity. System notifications are suspended during upgrade, but in effect at all other times.

To view system notifications, expand the main menu and navigate to **Alerts > System Alerts**. With appropriate permissions, you can activate or deactivate the notifications. For more information, see [View and Manage Alerts](#) in *Using vRealize Log Insight*.

You can specify where system notifications are sent by navigating to **Configuration > General**. System notifications concerning vRealize Log Insight can also be sent to third-party applications.

vRealize Log Insight System Notifications

vRealize Log Insight provides you with two sets of notifications about system health, general notifications, applicable for all product configurations, and notifications related to clusters for cluster-based deployments.

To view system notifications, expand the main menu and navigate to **Alerts > System Alerts**. With appropriate permissions, you can activate or deactivate the notifications. For more information, see [View and Manage Alerts](#) in *Using vRealize Log Insight*.

Note In this topic, an Admin user refers to a user associated with the Super Admin role, or a role that has the relevant permissions, as described in [Create and Modify Roles](#).

The following tables list and describe system notifications for vRealize Log Insight.

General System Notifications

vRealize Log Insight issues notifications about conditions that might require administrative intervention, including archival failure or alert scheduling delays.

Notification Name	Description
Oldest data will be unsearchable soon	<p>vRealize Log Insight is expected to start decommissioning old data from the virtual appliance storage based on the expected size of searchable data, storage space, and the current ingestion rate. Data that has been rotated out is archived if you have configured archiving, or deleted if you have not.</p> <p>To address this, add storage or adjust the retention notification threshold. For more information, see Configure vRealize Log Insight to Send Health Notifications.</p> <p>The notification is sent after each restart of the vRealize Log Insight service.</p>
Repository retention time	<p>A retention period is the length of time data is retained on the local disk of your vRealize Log Insight instance. A retention period is determined by the amount of data the system can hold and the current ingestion rate. For example, if you are receiving 10 GB/day of data (after indexing) and you have 300 GB of space, then your retention rate is 30 days.</p> <p>When your storage limit is reached, old data is removed to make way for newly ingested data. This notification tells you when the amount of searchable data that vRealize Log Insight can store at the current ingestion rates exceeds the storage space that is available on the virtual appliance.</p> <p>You might run out of storage before the time period set with the Retention Notification Threshold. Add storage or adjust the retention notification threshold.</p>

Notification Name	Description
Dropped events	<p>vRealize Log Insight failed to ingest all incoming log messages.</p> <ul style="list-style-type: none"> ■ If a TCP Message drops, as tracked by vRealize Log Insight server, a system notification is sent as follows: <ul style="list-style-type: none"> ■ Once a day ■ Each time the vRealize Log Insight service is restarted, manually or automatically ■ The email contains the number of messages dropped since last notification email was sent and total message drops since the last restart of vRealize Log Insight. <p>Note The time in the sent line is controlled by the email client, and is in the local time zone, while the email body displays the UTC time.</p>
Corrupt index buckets	<p>Part of the on-disk index is corrupt. A corrupt index usually indicates serious issues with the underlying storage system. The corrupt part of the index is excluded from serving queries. A corrupt index affects the ingestion of new data. vRealize Log Insight checks the integrity of the index upon service start-up. If corruption is detected, vRealize Log Insight sends a system notification as follows:</p> <ul style="list-style-type: none"> ■ Once a day ■ Each time the vRealize Log Insight service is restarted, manually or automatically
Out of disk	<p>vRealize Log Insight is running out of allocated disk space. vRealize Log Insight has most probably run into a storage-related issue.</p>
Archive space will be full	<p>The disk space on the NFS server used for archiving vRealize Log Insight data will be used up soon. If the amount of archived data that the NFS server can hold at the current ingestion rate is less than seven days, a system notification is sent. For example, if you are archiving with a disk consumption rate of 708.9 MB per day of data and you have 2000 MB space, you have about three days of capacity, which is less than the threshold. In this case, you will receive a notification that you are below this capacity.</p>
Total disk space change	<p>The total size of the partition for the vRealize Log Insight data storage has decreased. This notification usually signals a serious issue in the underlying storage system. When vRealize Log Insight detects the condition, it sends this notification as follows:</p> <ul style="list-style-type: none"> ■ Immediately ■ Once a day
Pending archivings	<p>vRealize Log Insight cannot archive data as expected. The notification usually indicates problems with the NFS storage that you configured for data archiving.</p>
Allocated log record storage volume reached 75 percent of the maximum log record storage capacity	<p>vRealize Log Insight is configured to ensure STIG compliance, and the allocated log record storage volume reaches 75 percent of the maximum log record storage capacity of the repository.</p> <p>Note This notification is sent per node.</p>
License is about to expire	<p>The license for vRealize Log Insight is about to expire.</p>

Notification Name	Description
License is expired	The license for vRealize Log Insight has expired.
SSL certificate is about to expire	The SSL certificate for the vRealize Log Insight cluster will expire in 30 days.
Unable to connect to AD server	vRealize Log Insight is unable to connect to the configured Active Directory server.
Cannot take over High Availability IP address [IP Address] as it is already held by another machine	<p>The vRealize Log Insight cluster was unable to take over the configured IP Address for the Integrated Load Balancer (ILB). The most common reason for this notification is that another host within the same network holds the IP address, and therefore the IP address is not available to be taken over by the cluster.</p> <p>You can resolve this conflict by either releasing the IP address from the host that currently holds it, or configuring Log Insight Integrated Load Balancer with a Static IP address that is available in the network. When changing the ILB IP address, you must reconfigure all clients to send logs to the new IP address, or to a FQDN/URL that resolves to this IP address. You must also unconfigure and reconfigure every vCenter Server integrated with vRealize Log Insight from the vSphere integration page.</p>
High Availability IP address [IP Address] is unavailable due to too many node failures	<p>The IP Address configured for the Integrated Load Balancer (ILB) is unavailable. Clients trying to send logs to a vRealize Log Insight cluster through the ILB IP address or a FQDN/URL that resolves to this IP address will see it as unavailable. The most common reason for this notification is that most of the nodes in the vRealize Log Insight cluster are unhealthy, unavailable, or unreachable from the primary node. Another common reason is that NTP time synchronization has not been activated, or the configured NTP servers have a significant time drift between each other. You can confirm that the problem is still ongoing by trying to ping (if allowed) the IP address to verify that it is not reachable.</p> <p>You can resolve this problem by ensuring that most of your cluster nodes are healthy and reachable, and enabling NTP time synchronization to accurate NTP servers.</p>
Too many migrations of High Availability IP address [your IP Address] between vRealize Log Insight nodes	<p>The IP address configured for the Integrated Load Balancer (ILB) has migrated too many times within the last 10 minutes.</p> <p>Under normal operation, the IP address rarely moves between vRealize Log Insight cluster nodes. However, the IP address might move if the current owner node is restarted or put in maintenance. The other reason can be the lack of time synchronization between Log Insight cluster nodes, which is essential for proper cluster functioning. For the latter, you can fix the problem by enabling NTP time synchronization to accurate NTP servers.</p>

Notification Name	Description
SSL certificate error	<p>A syslog source has initiated a connection to vRealize Log Insight over SSL but ended the connection abruptly. This notification might indicate that the syslog source was unable to confirm the validity of the SSL certificate. In order for vRealize Log Insight to accept syslog messages over SSL, a certificate that is validated by the client is required and the clocks of the systems must be synchronized. There might be a problem with the SSL Certificate or with the Network Time Service.</p> <p>You can validate that the SSL Certificate is trusted by your syslog source, reconfigure the source not to use SSL, or reinstall the SSL Certificate. See Configure the vRealize Log Insight Agent SSL Parameters and Install a Custom SSL Certificate.</p>
vCenter collection failed	<p>vRealize Log Insight is unable to collect vCenter events, tasks, and alarms. To look for the exact error that caused the collection failure and to see if collection is working currently, look in the <code>/var/log/vmware/loginsight/plugins/vsphere/li-vsphere.log</code> file.</p>
vCenter Kubernetes Service event collection failed	<p>vRealize Log Insight is unable to collect vCenter Kubernetes System events, tasks, and alarms. To look for the exact error that caused the collection failure and to see if collection is working currently, look in the <code>/var/log/vmware/loginsight/plugins/vsphere/li-vsphere.log</code> file.</p>
Event forwarder events dropped	<p>A forwarder drops events because of connection or overload problems.</p> <p>Example:</p> <pre>Log Insight Admin Alert: Event Forwarder Events Dropped This alert is about your Log Insight installation on https://<your_url> Event Forwarder Events Dropped triggered at 2016-08-02T18:41:06.972Z Log Insight just dropped 670 events for forwarder target 'Test', reason: Pending queue is full.</pre>
Alert queries behind schedule	<p>vRealize Log Insight was unable to run a user-defined alert at its configured time. The reason for the delay might be because of one or more inefficient user-defined alerts or because the system is not properly sized for the ingestion and query load.</p>
Auto deactivated alert	<p>If a user-defined alert has run at least 10 times and its average run time is more than one hour, the alert is considered inefficient and is deactivated to prevent impacting other user-defined alerts.</p>
Inefficient alert query	<p>If a user-defined alert takes more than one hour to finish, then the alert is deemed to be inefficient.</p>
New user created or user logged in for the first time	<p>vRealize Log Insight is configured to ensure STIG compliance, and a new user is created or an Active Directory or VMware Identity Manager user logs in for the first time.</p>

System Notifications for Clusters

vRealize Log Insight sends notifications about cluster topology changes, including the addition of new cluster members or transient node communication problems.

Sent by	Notification Name	Description
Primary node	Approval needed for new worker node	A worker node is sending a request to join a cluster. An Admin user must approve or reject the request.
Primary node	New worker node approved	An Admin user approved a membership request from a worker node to join a vRealize Log Insight cluster.
Primary node	New worker node denied	An Admin user rejected a membership request from a worker node to join a vRealize Log Insight cluster. If the request was denied by mistake, an Admin user can place the request again from the worker and then approve it at the primary node.
Primary node	Maximum supported nodes exceeded due to worker node	The number of worker nodes in the Log Insight cluster has exceeded the maximum supported count due to a new worker node.
Primary node	Allowed nodes exceeded, new worker node denied	An user attempted to add more nodes to the cluster than the maximum allowed node count and the node has been denied.
Primary node	Worker node disconnected	A previously connected worker node disconnected from the vRealize Log Insight cluster.
Primary node	Worker node reconnected	A worker node reconnected to the vRealize Log Insight cluster.
Primary node	Worker node revoked by	An Admin user revoked a worker node membership and the node is no longer a part of the vRealize Log Insight cluster.
Primary node	Unknown worker node rejected	The vRealize Log Insight primary node rejected a request by a worker node because the worker node is unknown to the primary. If the worker is a valid node and it should be added to the cluster, log in to the worker node, remove its token file and user configuration at <code>/storage/core/loginsight/config/</code> , and run <code>restart loginsight service</code> on the worker node.

Sent by	Notification Name	Description
Primary node	Worker node has entered into maintenance mode	A worker node entered into maintenance mode and an Admin user has to remove the worker node from maintenance mode before it can receive configuration changes and serve queries.
Primary node	Worker node has returned to service	A worker node exited maintenance mode and returned to service.
Worker node	Primary failed or disconnected from worker node	The worker node that sends the notification is unable to contact the vRealize Log Insight primary node. This notification might indicate that the primary node failed, and might need to be restarted. If the primary node failed, the cluster cannot be configured and queries cannot be submitted until it is back online. Worker nodes continue to ingest messages. Note You might receive many such notifications because many workers might detect the primary node failure independently and raise notifications.
Worker node	Primary connected to worker node	The worker node that sends the notification is reconnected to the vRealize Log Insight primary node.

Configuring Destinations for vRealize Log Insight System Notifications

You can configure the action that vRealize Log Insight takes when a system notification is triggered.

vRealize Log Insight generates system notifications when an important system event occurs, for example when the disk space is almost exhausted and vRealize Log Insight must begin deleting or archiving old log files.

Super Admin users and users with the relevant permissions can configure vRealize Log Insight to send email notifications about these events. The From address of system notification emails is configured on the SMTP configuration page, in the **Sender** text box. See [Configure the SMTP Server for vRealize Log Insight](#).

You can also send notifications to third-party applications. See [Configure a Webhook](#).

Configure vRealize Log Insight to Send Health Notifications

You can configure vRealize Log Insight to send notifications related to its own health.

If an email message cannot be delivered, you are notified of the error on the Web interface.

Prerequisites

- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.
- Verify that the SMTP server is configured for vRealize Log Insight. For more information, see [Configure the SMTP Server for vRealize Log Insight](#).

Procedure

- 1 Expand the main menu and navigate to **Configuration > General**.
- 2 Under the Alerts header, set the system notifications.
 - a In the **Email System Notifications To** text box, type the email addresses to be notified. Use commas to separate multiple email addresses.
 - b Select the **Retention notification threshold** check box and set the threshold that triggers the notifications.

A notification is sent when the amount of data the system can hold is insufficient for the time period specified. This value is calculated based on the current ingestion rate.
- 3 Click **Save**.
- 4 Click **Restart Log Insight** to apply your changes.

Configure vRealize Log Insight System Notifications for Third-Party Products

You can configure vRealize Log Insight to send notifications related to its own health to third-party applications.

vRealize Log Insight generates these notifications when an important system event occurs, for example when the disk space is almost exhausted and vRealize Log Insight must start deleting old log files.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Configuration > General**.

- 2 Under the Alerts header, set the system notifications.
 - a In the **Send HTTP Post System Notifications To** text box, type the URLs to be notified.
 - b (Optional) Confirm that the **Send a notification when capacity drops below** check box and associated threshold are configured correctly for your environment.
- 3 Click **Save**.

What to do next

Configure a webhook to send notifications to your third-party application. For more information, see [Configure a Webhook](#).

Webhook Format for a System Notification

The format of a vRealize Log Insight webhook depends on the type of query from which it is created. System notifications, user alert message queries, and alerts generated from aggregate user queries each have a different webhook format.

Note To configure vRealize Log Insight to send system notifications, you must be a user associated with the Super Admin role, or a role with the relevant permissions. For more information, see [Create and Modify Roles](#).

Webhook Format for System Notifications

The following example shows the vRealize Log Insight webhook format for system notifications.

```
{
  "AlertName": " Admin Alert: Worker node has returned to service (Host =
127.0.0.2)",
  "messages": [
    {
      "text": "This notification was generated from Log Insight node (Host =
127.0.0.2,
Node Identifier = a31cad22-65c2-4131-8e6c-27790892alf9).
A worker node has returned to service after having been in maintenance mode.
The Log Insight primary node reports that worker node has finished maintenance
and exited maintenance mode. The node will resume receiving configuration
changes and
serving queries. The node is also now ready to start receiving incoming log
messages."
      "timestamp": 1458665320514, "fields": []
    }
  ]
}
```


Add a vRealize Log Insight Log Forwarding Destination

You can configure a vRealize Log Insight server to forward incoming log events to a syslog or Ingestion API target.

Use log forwarding to send filtered or tagged logs to one or more remote destinations such as vRealize Log Insight or syslog or both. Log forwarding can be used to support existing logging tools such as SIEM and to consolidate logging over different networks such as DMZ or WAN.

Log forwarders can be standalone or clustered, but a log forwarder is a separate instance from the remote destination. Instances configured for log forwarding also store logs locally and can be used to query data.

The operators you use to create filters on the Log Forwarding page are different from the filters used on the Explore Logs page. See [Using Log Management Filters in Explore Logs](#) for more information about using the **Run in Explore Logs page** menu item to preview the results of your log filter.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Verify that the destination can handle the number of logs that are forwarded. If the destination cluster is much smaller than the forwarding instance, some logs might be dropped.

Procedure

- 1 Expand the main menu, click **Log Management** and then click **Log Forwarding**.
- 2 Click **+New Destination** and provide the following information.

Option	Description
Name	A unique name for the new destination.
Host	The IP address or fully qualified domain name.
	<p>Caution A forwarding loop is a configuration in which a vRealize Log Insight cluster forwards logs to itself, or to another cluster, which then forwards the logs back to the original cluster. Such a loop might create an indefinite number of copies of each forwarded log. The vRealize Log Insight Web interface does not permit you to configure a log to be forwarded to itself. But vRealize Log Insight is not able to prevent an indirect forwarding loop, such as vRealize Log Insight cluster A forwarding to cluster B, and B forwarding the same logs back to A. When creating forwarding destinations, take care not to create indirect forwarding loops.</p>

Option	Description
Protocol	<p>Ingestion API, syslog, or RAW. The default value is Ingestion API (CFAPI).</p> <p>When logs are forwarded using the Ingestion API, the log's original source is preserved in the source field. When logs are forwarded using syslog, the log's original source is lost and the receiver can record the message's source as the vRealize Log Insight forwarder's IP address or hostname. When logs are forwarded using RAW, the behavior is similar to syslog, but syslog RFC-compliance is not ensured. RAW forwards a log exactly the way it is received, without a custom syslog header added by vRealize Log Insight. This protocol is useful for third-party destinations, because they expect syslog events in their original form.</p> <hr/> <p>Note The source field might have different values depending on the protocol selected on the Log Forwarder:</p> <ul style="list-style-type: none"> a For the ingestion API, the source is the initial sender's (the log originator) IP address. b For syslog and RAW, the source is the Log Forwarder's vRealize Log Insight instance IP address.
Use SSL	You can optionally secure the connection with SSL for the ingestion API or syslog. If the SSL certificate provided by the forwarding destination is untrusted, you can accept the certificate when you test or save this configuration.
Tags	You can optionally add tag pairs with predefined values. Tags permit you to more easily query logs. You can add multiple comma-separated tags.
Forward Complementary tags	You can select whether to forward complementary tags for syslog. Complementary tags are tags added by the cluster itself, such as 'vc_username' or 'vc_vmname.' and can be forwarded with the tags coming directly from sources. Complementary tags are always forwarded when Ingestion API is used.
Transport	Select a transport protocol for syslog. You can select UDP or TCP.

3 To control which logs are forwarded, click **Add Filter**.

Select fields and constraints to define the desired logs. Only static fields are available for use as filters. If you do not select a filter, all logs are forwarded. You can see the results of the filter you are building by clicking **Run in Explore Logs page**.

Operator	Description
Matches	<p>Finds strings that match the string and wildcard specification, where * means zero or more characters and ? means zero or any single character. Prefix and postfix globbing is supported.</p> <p>For example, *test* matches strings such as test123 or my-test-run.</p>
does not match	<p>Excludes strings that match the string and wildcard specification, where * means zero or more characters and ? means zero or any single character. Prefix and postfix globbing is supported.</p> <p>For example, test* excludes test123, but not mytest123. ?test* excludes test123 and xtest123, but not mytest123.</p>

Operator	Description
starts with	Finds strings that start with the specified character string. For example, test finds test123 or test , but not my-test123 .
does not start with	Excludes strings that start with the specified character string. For example, test filters out test123 , but not my-test123 .

- 4 (Optional) To modify the following forwarding information, click **Show Advanced Settings**.

Option	Description
Port	The port to which logs are sent on the remote destination. The default value is set based on the protocol. Do not change unless the remote destination listens on a different port.
Worker Count	The number of simultaneous outgoing connections to use. Set a higher worker count for a higher network latency to the forwarded destination and for a greater number of forwarded logs per second. The default value is 8.

- 5 To verify your configuration, click **Test**.
- 6 If the forwarding destination provides an untrusted SSL certificate, a dialog box appears with the details of the certificate. Click **Accept** to add the certificate to the truststores of all the nodes in the vRealize Log Insight cluster.

If you click **Cancel**, the certificate is not added to the truststores and the connection with the forwarding destination fails. You must accept the certificate for a successful connection.

- 7 Click **Save**.

If you did not test the configuration and the destination provides an untrusted certificate, follow the instructions in step 7.

What to do next

You can edit or clone a log forwarding destination. If you edit the destination to change a log forwarder name, all statistics are reset.

Using Log Management Filters in Explore Logs

Operators used in log management filters and operators used in filters in Explore Logs do not have a one-to-one correspondence by name. However, you can select operators that produce similar results for both formats.

This difference is important when you use the **Run in Explore Logs page** menu item from the following tabs in the **Log Management** page:

- **Log Masking**
- **Log Filtering**
- **Log Forwarding**
- **Cloud Forwarding**

■ Index Partitions

For example, if you have a log management filter of **matches *foo*** and select the menu item **Run in Explore Logs page**, the Explore Logs query equates the log management filter to **match regexp ^.*foo.*\$**, which might not match all the same log events.

Another example is **matches foo**, which when run on Explore Logs is treated as **contains foo**. Because the Explore Logs function also searches keyword queries, **contains foo** is likely to match more events than **matches foo**.

You can change the operators used by Explore Logs to address these differences.

- Change the **contains** operator to **matches regex**.
- Change occurrences of ***** from log management filters to **.** and prefix filter terms with **.**. For example, change the event filter expression **matches *foo*** to **matches regex .*foo.*** for Explore Logs.
- For the **does not match** operator from event filters, you can use the **matches regex** operator with a regex look ahead value. For example, **does not match *foo*** is equivalent to **matches regex .(?!foo)***.

Configure Log Forwarding to vRealize Log Insight Cloud

Add a cloud forwarder to forward logs from a vRealize Log Insight server to vRealize Log Insight Cloud without using a Cloud Proxy.

Use cloud forwarding to send filtered or tagged events to vRealize Log Insight Cloud. Cloud forwarding lets you consolidate logging over different networks and eventually concentrate data in vRealize Log Insight Cloud.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu, click **Log Management**, and then click **Cloud Forwarding**.
- 2 Click **+New Forwarder** and provide the following information.

Option	Description
Name	A unique name for the cloud forwarder. Note Once you assign a name for the forwarder, you cannot modify the name.
Cloud channel	Select a cloud channel to use in your cloud forwarder. For more information, see Add a Cloud Channel .

Option	Description
Tags	Optionally, add tag pairs with predefined values. Tags let you query logs easily. You can add multiple comma-separated tags.
Filter	Control which logs are forwarded to vRealize Log Insight Cloud. Select static fields and constraints to define the desired logs. If you do not select a filter, all logs are forwarded. You can see the results of the filter you are building by clicking Run in Explore Logs page . For information about using filters in a cloud forwarder, see Using Log Management Filters in Explore Logs .

- (Optional) To modify additional cloud forwarding information, click **Show Advanced Settings**.

Option	Description
Worker Count	The number of simultaneous outgoing connections to use. Set a higher worker count for a higher network latency to vRealize Log Insight Cloud and for a greater number of forwarded logs per second. The default value is 16.

- Click **Save**.

Results

The relevant logs are forwarded to the vRealize Log Insight Cloud service. You can query these logs in the **Explore Logs** page of the service.

Add a Cloud Channel

Add a cloud channel to forward logs from a vRealize Log Insight server to vRealize Log Insight Cloud without using a Cloud Proxy.

Note You can add only one cloud channel in vRealize Log Insight.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- Expand the main menu, click **Integrations**, and then click **Cloud Connection**.
- Click **+Add New**.

3 Provide the following information.

Option	Description
Cloud Channel Name	A unique name for the cloud channel. Note Once you assign a name for the channel, you cannot modify the name.
Cloud URL	The API URL that appears in the pop-up window when you generate an API key in vRealize Log Insight Cloud. For more information, see Securing Logs with API Keys in <i>Using vRealize Log Insight Cloud</i> .
Cloud Key	The API key generated in vRealize Log Insight Cloud. Note <ul style="list-style-type: none"> ■ The API key is unique for each connection and must not be used anywhere else. ■ When you regenerate the API key in vRealize Log Insight Cloud, ensure that you update it here too.

4 Click **Save**.

What to do next

Use your cloud channel to configure a log forwarder to vRealize Log Insight Cloud. For more information, see [Configure Log Forwarding to vRealize Log Insight Cloud](#).

Synchronize the Time on the vRealize Log Insight Virtual Appliance

You must synchronize the time on the vRealize Log Insight virtual appliance with an NTP server or with the ESX/ESXi host on which you deployed the virtual appliance.

Time is critical to the core functionality of vRealize Log Insight.

By default, vRealize Log Insight synchronizes time with a pre-defined list of public NTP servers. If public NTP servers are not accessible due to a firewall, you can use the internal NTP server of your company. If no NTP servers are available, you can sync time with the ESX/ESXi host where you have deployed the vRealize Log Insight virtual appliance.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Configuration > Time**.

- From the **Sync time with** drop-down menu, select the time source.

Option	Description
NTP server	Synchronizes the time on the vRealize Log Insight virtual appliance with one of the listed NTP servers.
ESX/ESXi host	Synchronizes the time on the vRealize Log Insight virtual appliance with the ESX/ESXi host on which you have deployed the virtual appliance.

- (Optional) If you selected NTP server synchronization, list the NTP server addresses, and click **Test**.

Note Testing the connection to NTP servers might take up to 20 seconds per server.

- Click **Save**.

Configure the SMTP Server for vRealize Log Insight

You can configure an SMTP to allow vRealize Log Insight to send email notifications.

System notifications are generated when vRealize Log Insight detects an important system event, for example when the storage capacity on the virtual appliance reaches the thresholds that you set.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- Expand the main menu and navigate to **Configuration > SMTP**.
- Enter the SMTP server address and port number.
- If the SMTP server uses an encrypted connection, select the encryption protocol.
- In the **Sender** text box, type an email address to use when sending system notifications.
The **Sender** address appears as the From address in system notification emails. It need not be a real address, and can be something that represents the specific instance of vRealize Log Insight. For example, `loginsight@example.com`.
- Type a user name and password to authenticate with the SMTP server when sending system notifications.
- Type a destination email and click **Send Test Email** to verify the connection.

- 7 If the SMTP server provides an untrusted SSL certificate, a dialog box appears with the details of the certificate. Click **Accept** to add the certificate to the truststores of all the nodes in the vRealize Log Insight cluster.

If you click **Cancel**, the certificate is not added to the truststores and the connection with the SMTP server fails. You must accept the certificate for a successful connection.

- 8 Click **Save**.

If you did not test the connection and the SMTP server provides an untrusted certificate, follow the instructions in step 7.

Configure an HTTP Proxy

If your vRealize Log Insight appliance is restricted to the public network or the intranet, you can configure an HTTP proxy to let vRealize Log Insight send webhook notifications to endpoints such as Slack, PagerDuty, vRO, or a custom endpoint, which can be accessed through an isolated network.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Configuration > Proxy**.
- 2 Click **ADD NEW HTTP PROXY**.
- 3 In the **Name** text box, enter a unique name for your proxy.
- 4 In the **Host/IP** text box, enter the FQDN or IP address of your proxy server.
- 5 In the **Proxy Port** text box, enter the port of your proxy server.
- 6 In the **Username** and Password text boxes, enter the username and password for authentication with your proxy server while sending webhook notifications.
- 7 To verify that the connection with your proxy works, click **Test**.
- 8 Click **Save**.

What to do next

You can use this HTTP proxy when you configure a webhook to send alert notifications. For more information, see [Configure a Webhook](#).

Note The cache settings on the proxy determines the validation frequency of the username and password.

Configure a Webhook

You can configure a webhook to send alert notifications to a remote web server. Webhooks provide notifications over HTTP POST/PUT.

Prerequisites

- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.
- If you are creating a webhook with a vRealize Orchestrator (vRO) endpoint, ensure that you have created a workflow in vRealize Orchestrator. For more information, see [Create Workflows in the vRealize Orchestrator Client](#).

Procedure

- 1 Expand the main menu and navigate to **Alerts > Webhook**.
- 2 Click **New Webhook**.
- 3 In the **Name** text box, enter a name for the webhook.
- 4 Enter the following information.

Option	Description
Endpoint	<p>Select the endpoint to which you want to send the notification, for example, Slack, Pager Duty, vRO, or a custom endpoint. Based on the selected endpoint type:</p> <ul style="list-style-type: none"> ■ The user interface provides additional input options. ■ The user interface populates the webhook payload with a predefined template, which you can customize according to your requirement.
Log Payload	<p>Select whether you want to send one webhook notification for each result matching the corresponding alert query or one notification for all matching results.</p> <ul style="list-style-type: none"> ■ To send one webhook notification for each matching result, select Individual Logs. <p>Note If you select this option, you can send up to 10 notifications.</p> <ul style="list-style-type: none"> ■ To send one webhook notification for all matching results, select Log Stream.
Webhook URL	<p>Enter the URL for the remote web server where you want to post the webhook notifications. The URL format changes based on your endpoint selection. The sample format is provided in the text box.</p> <p>Note In a vRO endpoint URL, you must include the ID of the corresponding workflow created in vRealize Orchestrator.</p> <p>After entering the URL, click Test Alert to verify the connection.</p> <p>You can enter multiple webhook URLs separated by a blank space.</p>

Option	Description
Web Proxy	If you have Configure an HTTP Proxy , select a proxy from the drop-down menu. vRealize Log Insight sends webhook notifications to the endpoint through the selected proxy.
Integration Key	If you select a Pager Duty endpoint, enter an integration key for webhook requests.
Advanced Settings	<p>If you select a vRO or custom endpoint, enter additional information such as content type, authorization, and so on.</p> <ul style="list-style-type: none"> ■ For a vRO endpoint, the default value for Content Type is JSON. You can change it to XML if required. The webhook payload is generated according to the selected content type. <p>Provide an authorization header to authorize vRO requests. Some of the authorization options are:</p> <ul style="list-style-type: none"> ■ Basic authentication - Retain the default value Authorization in the first text box. In the second text box, enter a value in the format Basic Base64_encoded_string_for_username_and_password. ■ Bearer token authentication - Retain the default value Authorization in the first text box. In the second text box, enter a value in the format Bearer bearer_token. ■ For a custom endpoint, the default value for Content Type is JSON and Action is POST. You can customize these options and add additional headers to the request under Custom Headers. If the configured remote web server requires authorization to POST/PUT the webhook notification, enter the user name and password to authenticate with the server in the Authorization User and Authorization Password text boxes.

Option	Description
Webhook Payload	<p>This area is auto-populated based on your selection in the Endpoint drop-down menu. You can customize the payload, which is the template of the body sent as a part of the POST/PUT webhook notification request. The body can be in XML or JSON format. The parameters in the payload are replaced with the actual values while sending the webhook notification. For example the parameter <i>\$(AlertName)</i> is replaced with the name of the alert.</p> <p>Note For a vRO endpoint, the parameters should match the input or output parameters in the corresponding workflow created in vRealize Orchestrator.</p>
Parameters	<p>You can use the list of parameters to construct or modify the webhook payload.</p> <ul style="list-style-type: none"> ■ AlertName ■ AlertNameString ■ AlertType ■ AlertTypeString ■ SearchPeriod ■ SearchPeriodString ■ HitOperator ■ HitOperatorString ■ messages ■ messagesString ■ HasMoreResults ■ HasMoreResultsString ■ Url ■ UrlString ■ EditUrl ■ EditUrlString ■ Info ■ InfoString ■ Recommendation ■ RecommendationString ■ NumHits ■ NumHitsString ■ TriggeredAt ■ TriggeredAtString ■ SourceInfo ■ SourceInfoString <p>Note Except <code>messagesString</code>, all the other string parameter types have the same content.</p>

5 Click **Save**.

What to do next

Configure an alert to send webhook notifications to the selected endpoint. For more information, see [Add an Alert to Send Webhook Notifications](#).

After configuring the alert, you can view the webhook notifications in the endpoint. For example, in vRO, the webhook notifications are listed as workflow runs. In each workflow run, you can see the values for the payload parameters in the variables section.

Install a Custom SSL Certificate

By default, vRealize Log Insight installs a self-signed SSL certificate on the virtual appliance.

The self-signed certificate generates security warnings when you connect to the vRealize Log Insight web user interface. If you do not want to use a self-signed security certificate, you can install a custom SSL certificate. The only feature requiring a custom SSL certificate is Log Forwarding through SSL. If you have a Cluster setup with ILB enabled, see [Activate the Integrated Load Balancer](#) for the specific requirements of a custom SSL certificate.

Note The vRealize Log Insight Web user interface and the Log Insight Ingestion protocol `cfapi` use the same certificate for authentication.

Prerequisites

- Verify that your custom SSL certificate meets the following requirements.
 - The CommonName contains a wildcard or exact match for the primary node or FQDN of the virtual IP address. Optionally, all other IP addresses and FQDNs are listed as subjectAltName.
 - The certificate file contains both a valid private key and a valid certificate chain.
 - The private key is generated by the RSA or the DSA algorithm.
 - The private key is not encrypted by a pass phrase.
 - If the certificate is signed by a chain of other certificates, all other certificates are included in the certificate file that you plan to import.
 - The private key and all the certificates that are included in the certificate file are PEM-encoded. vRealize Log Insight does not support DER-encoded certificates and private keys.
 - The private key and all the certificates that are included in the certificate file are in the PEM format. vRealize Log Insight does not support certificates in the PFX, PKCS12, PKCS7, or other formats.
- Verify that you concatenate the entire body of each certificate into a single text file in the following order.
 - a The Private Key - `your_domain_name.key`
 - b The Primary Certificate - `your_domain_name.crt`
 - c The Intermediate Certificate - `DigiCertCA.crt`
 - d The Root Certificate - `TrustedRoot.crt`

- Verify that you include the beginning and ending tags of each certificate in the following format.

```

-----BEGIN PRIVATE KEY-----
(Your Private Key: your_domain_name.key)
-----END PRIVATE KEY-----
-----BEGIN CERTIFICATE-----
(Your Primary SSL certificate: your_domain_name.crt)
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
(Your Intermediate certificate: DigiCertCA.crt)
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
(Your Root certificate: TrustedRoot.crt)
-----END CERTIFICATE-----

```

- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

1 Generate a Self-Signed Certificate

You can generate a self-signed certificate for Windows or Linux by using the OpenSSL tool.

2 Generate a Certificate Signing Request

Generate a certificate-signing request by using the OpenSSL tool for Windows.

3 Request a Signature from a Certificate Authority

Send your certificate signing request to a Certificate Authority of your choice and request a signature.

4 Concatenate Certificate Files

Combine your key and certificate files into a PEM file.

5 Upload Signed Certificate

You can upload a signed SSL certificate.

6 Configure SSL Connection Between the vRealize Log Insight Server and the Log Insight Agents

SSL function allows you to provide SSL only connections between the Log Insight Agents and the vRealize Log Insight Server through the secure flow of Ingestion API. You can also configure various SSL parameters of the Log Insight Agents.

Generate a Self-Signed Certificate

You can generate a self-signed certificate for Windows or Linux by using the OpenSSL tool.

Prerequisites

- Download the appropriate installer for OpenSSL from <https://www.openssl.org/community/binaries.html>. Use the downloaded OpenSSL installer to install it on Windows.
- Edit the `openssl.cfg` file to add additional required parameters. Make sure the `[req]` section has the `req_extensions` parameter defined.

```
[req]
.
.
req_extensions=v3_req #
```

- Add an appropriate Subject Alternative Name entry for the hostname or IP address of your server, for example `server-01.loginsight.domain`. You cannot specify a pattern for the hostname.

```
[v3_req]
.
.
subjectAltName=DNS:server-01.loginsight.domain
#subjectAltName=IP:10.27.74.215
```

Procedure

- 1 Create a folder to save your certificate files, for example `C:\Certs\LogInsight`.
- 2 Open a command prompt and run the following command.

```
C:\Certs\LogInsight>openssl req -x509 -nodes -newkey 2048 -keyout server.key -out
server.crt -days 3650
```

OpenSSL prompts you to supply certificate properties, including country, organization, and so on.

- 3 Enter the exact IP address or hostname of your vRealize Log Insight server, or the vRealize Log Insight cluster address if load balancing is enabled.

This property is the only one for which it is mandatory to specify a value.

Results

Two files are created, `server.key` and `server.crt`.

- `server.key` is a new PEM-encoded private key.
- `server.crt` is a new PEM-encoded certificate signed by `server.key`.

Generate a Certificate Signing Request

Generate a certificate-signing request by using the OpenSSL tool for Windows.

Prerequisites

- Install the OpenSSL tool. See <http://www.openssl.org> for information about obtaining the OpenSSL tool.
- Edit the `openssl.cnf` file to add additional required parameters. Make sure the `[req]` section has the `req_extensions` parameter defined.

```
[req]
.
.
req_extensions=v3_req #
```

- Add an appropriate Subject Alternative Name entry for the hostname or IP address of your server, for example `server-01.loginsight.domain`. You cannot specify a pattern for the hostname.

```
[v3_req]
.
.
subjectAltName=DNS:server-01.loginsight.domain
#subjectAltName=IP:10.27.74.215
```

Procedure

- 1 Create a folder to save your certificate files, for example `C:\Certs\LogInsight`.
- 2 Open a Command Prompt and run the following command to generate your private key.

```
C:\Certs\LogInsight>openssl genrsa -out server.key 2048
```

- 3 Create a certificate signing request by running the following command.

```
C:\Certs\LogInsight>openssl req -new -key server.key -out server.csr
```

Note This command runs interactively and asks you a number of questions. Your certificate authority will cross check your answers. Your answers must match the legal documents regarding the registration of your company.

- 4 Follow the onscreen instructions and enter the information that will be incorporated into your certificate request.

Important In the Common Name field, enter the hostname or IP address of your server, for example `mail.your.domain`. If you want to include all subdomains, enter `*your.domain`.

Results

Your certificate signing request file `server.csr` is generated and saved.

Request a Signature from a Certificate Authority

Send your certificate signing request to a Certificate Authority of your choice and request a signature.

Procedure

- ◆ Submit your `server.csr` file to a Certificate Authority.

Note Request that the Certificate Authority encode your file in the PEM format.

The Certificate Authority processes your request and sends you back a `server.crt` file encoded in the PEM format.

Concatenate Certificate Files

Combine your key and certificate files into a PEM file.

Procedure

- 1 Create a new `server.pem` file and open it in a text editor.
- 2 Copy the contents of your `server.key` file and paste it in `server.pem` using the following format.

```
-----BEGIN RSA PRIVATE KEY-----
(Your Private Key: server.key)
-----END RSA PRIVATE KEY-----
```

- 3 Copy the contents of the `server.crt` file you received from a certificate authority and paste it in `server.pem` using the following format.

```
-----BEGIN CERTIFICATE-----
(Your Primary SSL certificate: server.crt)
-----END CERTIFICATE-----
```

- 4 If the Certificate Authorities provided you with an intermediate or chained certificate, append the intermediate or chained certificates to the end of the public certificate file in the following format.

```
-----BEGIN RSA PRIVATE KEY-----
(Your Private Key: server.key)
-----END RSA PRIVATE KEY-----
-----BEGIN CERTIFICATE-----
(Your Primary SSL certificate: server.crt)
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
(Your Intermediate certificate: DigiCertCA.crt)
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
(Your Root certificate: TrustedRoot.crt)
-----END CERTIFICATE-----
```


- 5 Save your `server.pem` file.

Upload Signed Certificate

You can upload a signed SSL certificate.

Procedure

- 1 Expand the main menu and navigate to **Configuration > SSL**.
- 2 Browse to your custom SSL certificate and click **Open**.
- 3 Click **Save**.
- 4 Restart vRealize Log Insight.

What to do next

After vRealize Log Insight restarts, verify that syslog feeds from ESXi continue to arrive in vRealize Log Insight.

Configure SSL Connection Between the vRealize Log Insight Server and the Log Insight Agents

SSL function allows you to provide SSL only connections between the Log Insight Agents and the vRealize Log Insight Server through the secure flow of Ingestion API. You can also configure various SSL parameters of the Log Insight Agents.

vRealize Log Insight Agents communicate over TLSv.1.2. SSLv.3/TLSv.1.0 is deactivated to meet security guidelines.

Main SSL Functions

Understanding of the main SSL functions can help you configure the Log Insight Agents properly.

The vRealize Log Insight Agent stores certificates and uses them to verify the identity of the server during all but the first connection to a particular server. If the server identity cannot be confirmed, the vRealize Log Insight Agent rejects connection with server and writes an appropriate error message to the log. Certificates received by the Agent are stored in `cert` folder.

- For Windows go to `C:\ProgramData\VMware\Log Insight Agent\cert`.
- For Linux go to `/var/lib/loginsight-agent/cert`.

When the vRealize Log Insight Agent establishes secure connection with the vRealize Log Insight Server, the Agent checks the certificate received from the vRealize Log Insight Server for validity. The vRealize Log Insight Agent uses system-trusted root certificates.

- The Log Insight Linux Agent loads trusted certificates from `/etc/pki/tls/certs/ca-bundle.crt` or `/etc/ssl/certs/ca-certificates.crt`.
- The Log Insight Windows Agent uses system root certificates.

If the vRealize Log Insight Agent has a locally stored self-signed certificate and receives a different valid self-signed certificate with the same public key, then the agent accepts the new certificate. This can happen when a self-signed certificate is regenerated using the same private key but with different details like new expiration date. Otherwise, connection is rejected.

If the vRealize Log Insight Agent has a locally stored self-signed certificate and receives valid CA-signed certificate, the vRealize Log Insight Agent silently replaces new accepted certificate.

If the vRealize Log Insight Agent receives self-signed certificate after having a CA-signed certificate, the Log Insight Agent rejects it. The vRealize Log Insight Agent accepts self-signed certificate received from vRealize Log Insight Server only when it connects to the server for the first time.

If the vRealize Log Insight Agent has a locally stored CA-signed certificate and receives a valid certificate signed by another trusted CA, the Agent rejects it. You can modify the configuration options of the vRealize Log Insight Agent to accept the new certificate. See [Configure the vRealize Log Insight Agent SSL Parameters](#).

vRealize Log Insight Agents communicate over TLSv.1.2. SSLv.3/TLSv.1.0 is deactivated to meet security guidelines.

Enforce SSL-Only Connections

You can use the vRealize Log Insight Web user interface to configure the vRealize Log Insight Agents and the Ingestion API to allow only SSL connections to the server.

The vRealize Log Insight API is normally reachable through HTTP on port 9000 and through HTTPS on port 9543. Both ports can be used by the vRealize Log Insight Agent or custom API clients. All authenticated requests require SSL, but unauthenticated requests, including vRealize Log Insight agent ingestion traffic, can be performed with either. You can force all API request to use SSL connections. The option does not restrict syslog port 514 traffic or affect the vRealize Log Insight user interface, for which HTTP port 80 requests continue redirecting to HTTPS port 443.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Configuration > SSL**.
- 2 Under the API Server SSL, select **Require SSL Connection**.
- 3 Click **Save**.

Results

vRealize Log Insight API allows only SSL connections to the server. Non-SSL connections are refused.

Configure the vRealize Log Insight Agent SSL Parameters

You can edit the vRealize Log Insight agent configuration file to change the SSL configuration, add a path to the trusted root certificates, and say whether the agent accepts certificates.

This procedure applies to the vRealize Log Insight agents for Windows and Linux.

Prerequisites

For the vRealize Log Insight Linux agent:

- Log in as **root** or use `sudo` to run console commands.
- Log in to the Linux machine on which you installed the vRealize Log Insight Linux agent, open a console and run `pgrep liagent` to verify that the vRealize Log Insight Linux agent is installed and running.

For the vRealize Log Insight Windows agent:

- Log in to the Windows machine on which you installed the vRealize Log Insight Windows agent and start the Services manager to verify that the vRealize Log Insight agent service is installed.

Procedure

- 1 Navigate to the folder containing the `liagent.ini` file.

Operating system	Path
Linux	<code>/var/lib/loginsight-agent/</code>
Windows	<code>%ProgramData%\VMware\Log Insight Agent</code>

- 2 Open the `liagent.ini` file in any text editor.

3 Add the following keys to the `[server]` section of the `liagent.ini` file.

Key	Description
<code>ssl_ca_path</code>	<p>Overrides the default storage path for root Certificate Authority-signed certificates, which are used to verify connection peer certificates.</p> <p>When you provide a path for <code>ssl_ca_path</code>, you override the defaults for both Linux and Windows agents. You can use a file where multiple certificates in PEM format are concatenated or a directory that contains certificates are in PEM format and have names of the form <code>hash.0</code>. (See the <code>-hash</code> option of the <code>x509</code> utility.)</p> <p>Linux: If no value is specified, the agent uses the value assigned to the <code>LI_AGENT_SSL_CA_PATH</code> environment variable. If that value is not present, the agent attempts to load trusted certificates from the <code>/etc/pki/tls/certs/ca-bundle.crt</code> file or from the <code>/etc/ssl/certs/ca-certificates.crt</code> file.</p> <p>Windows: If no value is specified, the agent uses the value specified by the <code>LI_AGENT_SSL_CA_PATH</code> environment variable. If that value is not present, the vRealize Log Insight Windows agent loads certificates from the Windows root certificate store.</p>
<code>ssl_accept_any</code>	<p>Defines whether any certificates are accepted by the vRealize Log Insight agent. The possible values are <code>yes</code>, <code>1</code>, <code>no</code>, or <code>0</code>. When the value is set to <code>yes</code> or <code>1</code>, the agent accepts any certificate from the server and establish secure connection for sending data. The default value is <code>no</code>.</p>
<code>ssl_accept_any_trusted</code>	<p>The possible values are <code>yes</code>, <code>1</code>, <code>no</code>, or <code>0</code>. If the vRealize Log Insight agent has a locally stored trusted Certificate Authority-signed certificate and receives a different valid certificate signed by a different trusted Certificate Authority, it checks the configuration option. If the value is set to <code>yes</code> or <code>1</code>, the agent accepts the new valid certificate. If the value is set to <code>no</code> or <code>0</code>, it rejects the certificate and ends the connection. The default value is <code>no</code>.</p>
<code>ssl_cn</code>	<p>The <code>Common Name</code> of the self-signed certificate.</p> <p>The default value is <code>VMware vCenter Log Insight</code>.</p> <p>You can define a custom <code>Common Name</code> to be checked against the certificate <code>Common Name</code> field. The vRealize Log Insight agent compares the <code>Common Name</code> field of the received certificate to the host name specified for the <code>hostname</code> key in the <code>[server]</code> section. If they do not match, the agent checks the <code>Common Name</code> text box against the <code>ssl_cn</code> key in the <code>liagent.ini</code> file. If the values match, the vRealize Log Insight agent accepts the certificate.</p>

Note These keys are ignored if SSL is deactivated.

4 Save and close the `liagent.ini` file.

Example: Configuration

The following is an example of the SSL configuration for CA-signed certificates.

```
proto=cfapi
port=9543
ssl=yes
ssl_ca_path=/etc/pki/tls/certs/ca-bundle.crt
ssl_accept_any=no
ssl_accept_any_trusted=yes
ssl_cn=LOGINSIGHT
```

The following is an example of the SSL configuration for accepting any type of certificates, including self-signed.

```
proto=cfapi
port=9543
ssl=yes
ssl_accept_any=yes
```

View and Remove SSL Certificates

You can view the SSL certificates that have been accepted and added to the truststores of all the nodes in your vRealize Log Insight cluster. You can also remove the certificates that you do not require anymore.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Certificates**.
- 2 Do either of the following:
 - To view the information about a certificate, click the information icon to the right of the thumbprint of the certificate.
 - To remove certificates, select the certificates and click **Delete**. Optionally, you can click the delete icon to the right of the thumbprint of each certificate.

Tip You can sort and filter the certificates by using the options provided.

Change the Default Timeout Period for vRealize Log Insight Web Sessions

By default, to keep your environment secure, vRealize Log Insight Web sessions expire in 30 minutes. You can increase or decrease the timeout duration.

Note The change in the timeout period is applicable only for newly created sessions.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Configuration > General**.
- 2 In the Browser Session pane, specify a timeout value in minutes.
The value `-1` deactivates session timeouts.
- 3 Click **Save**.

Retention and Archiving

You can retain log data in index partitions by defining different retention periods for different types of logs. For example, you can define a short retention period for logs with sensitive information. You can also archive the log data in a partition for an extended period of time. If you enable archiving for an index partition, the data in the partition is moved to an NFS mount after its retention period.

Configure an Index Partition

You can retain log data in a partition with a filter and a retention period. Index partitions let you define different retention periods for different types of logs. For example, logs with sensitive information might require a short retention period, such as five days. You can also archive the data in an index partition to an NFS mount, to retain the logs for an extended period.

The log data that matches the filter criteria for an index partition is stored in the partition for the specified retention period. If you activate archiving, the data is moved to an NFS storage after the retention period. Logs that do not match the filter criteria in any of the defined index partitions are stored in the default partition. This partition is always activated and stores data for an unlimited amount of time. You can modify the retention period and activate archiving for the default partition.

Note You can create a maximum of five index partitions.

Prerequisites

- If you want to activate archiving for an index partition, verify that you have access to an NFS partition that meets the following requirements.
 - The NFS partition must allow reading and writing operations for guest accounts.
 - The mount must not require authentication.
 - The NFS server must support NFS v3 or v4.
 - If using a Windows NFS server, allow unmapped user UNIX access (by UID/GID).

For more information about archiving, see [Data Archiving](#).

- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu, click **Log Management** and then click **Index Partitions**.
 - 2 To view details for the default partition such as the retention period and archival location, click the edit icon against the partition titled **Default Partition**. To modify the details for the partition, click the edit icon and follow steps 7 through 9.
 - 3 To create a partition, click **New Partition** and follow steps 5 through 9.
 - 4 In the **Partition Name** text box, enter a name for the index partition.
 - 5 Add one or more filters to refine the logs that you want to store in the index partition. Optionally, click **Run in Explore Logs page** to preview the filtered log results.
 - 6 In the **Retention Period** text box, enter the number of days for which you want to retain logs in the index partition. Enter **0** for an unlimited retention period.
 - 7 Click the **Archive Location** toggle button to archive the log data in the partition. In the text box, enter the NFS location where you want to store the archived data, in the form `nfs://servername<:port-number>/exportname`. The port number defaults to 2049.
- Click **Test** to verify the connection with the NFS storage.

8 Click **Save**.

Note

- The index partition is activated by default. To deactivate it, use the toggle button against the partition on the **Index Partitions** tab.
- Creating, modifying, and deleting index partitions requires you to restart vRealize Log Insight on all the cluster nodes.

After vRealize Log Insight restarts, verify that syslog feeds from ESXi continue to arrive in vRealize Log Insight.

Results

The index partition is listed in the **Index Partitions** tab with information about whether the partition is activated, the filter criteria, retention period, storage used, and time of ingesting the first log. You can view or modify the partition details by clicking the edit icon against the partition name.

Data Archiving

Data archiving preserves old logs that might otherwise be removed from an index partition after the retention period. vRealize Log Insight can store archived data to NFS mounts.

Note

- Data archiving happens during log ingestion, as described in [Key Aspects of the Event Life Cycle](#) in *Getting Started with vRealize Log Insight*.
 - vRealize Log Insight does not manage the NFS mount used for archiving purposes. If system notifications are enabled, vRealize Log Insight sends an email when the NFS mount is about to run out of space or is unavailable.
 - Archived log events are no longer searchable. If you want to search archived logs, you must import them into a vRealize Log Insight instance. For information about importing archived log files, see [Import a vRealize Log Insight Archive into vRealize Log Insight](#).
 - Do not mount NFS permanently or change the `/etc/fstab` file. vRealize Log Insight itself performs NFS mounting for you.
-

For information about enabling archiving in an index partition, see [Configure an Index Partition](#).

Format of the vRealize Log Insight Archive Files

vRealize Log Insight archives data in a specific format.

vRealize Log Insight stores archive files on an NFS server and organizes them in hierarchical directories based on archiving time. For example,

```
/backup/2014/08/07/16/bd234b2d-df98-44ae-991a-e0562f10a49/data.blob
```


where `/backup` is the NFS location, `2014/08/07/16` is the archiving time, `bd234b2d-df98-44ae-991a-e0562f10a49` is the bucket ID of the bucket that stores the log files, and `data.blob` is the archived data for the bucket.

The archive data `data.blob` is a compressed file that uses vRealize Log Insight internal encoding. It contains the original content for all of the messages stored in the bucket, together with the static fields such as timestamp, host name, source, and appname.

You can import archived data to vRealize Log Insight, export archive data to a raw text file, and extract message content from archive data. See [Export a Log Insight Archive to a Raw Text File or JSON](#) and [Import a vRealize Log Insight Archive into vRealize Log Insight](#).

Import a vRealize Log Insight Archive into vRealize Log Insight

Data archiving preserves old logs that might otherwise be removed from an index partition after the retention period. See [Data Archiving](#). You can use the command line to import logs that have been archived in vRealize Log Insight.

Note Although vRealize Log Insight can handle historic data and real-time data simultaneously, you are advised to deploy a separate instance of vRealize Log Insight to process imported log files.

Prerequisites

- Verify that you have the root user credentials to log in to the vRealize Log Insight virtual appliance.
- Verify that you have access to the NFS server where vRealize Log Insight logs are archived.
- Verify that the vRealize Log Insight virtual appliance has enough disk space to accommodate the imported log files.

The minimum free space in the `/storage/core` partition on the virtual appliance must equal approximately 10 times the size of the archived log that you want to import.

Procedure

- 1 Establish an SSH connection to the vRealize Log Insight vApp and log in as the root user.
- 2 Mount the shared folder on the NFS server where the archived data resides.

- 3 To import a directory of archived vRealize Log Insight logs, run the following command.

```
/usr/lib/loginsight/application/bin/loginsight repository import Path-To-Archived-Log-Data-Folder.
```

Note

- To avoid the modification of the timestamp of the directory to be imported, ensure that this command is executed from a directory other than the one you want to import. Running the command from the directory you want to import results in the creation of a `JavaClient.log` file and an update of the directory's modification timestamp.
- Importing archived data might take a long time, depending on the size of the imported folder.

- 4 Close the SSH connection.

What to do next

You can search, filter, and analyze the imported log events.

Export a Log Insight Archive to a Raw Text File or JSON

You can use the command line to export a vRealize Log Insight archive to a regular raw text file or in JSON format.

Note This is an advanced procedure. Command syntax and output formats might change in later releases of vRealize Log Insight without backward compatibility.

Prerequisites

- Verify that you have the root user credentials to log in to the vRealize Log Insight virtual appliance.
- Verify that the vRealize Log Insight virtual appliance has enough disk space to accommodate the exported files.

Procedure

- 1 Establish an SSH connection to the vRealize Log Insight vApp and log in as the root user.
- 2 Create an archive directory on the vRealize Log Insight vApp.

```
mkdir /archive
```

- 3 Mount the shared folder on the NFS server where the archived data resides by running the following command.

```
mount -t nfs archive-fileshare:archive directory path /archive
```

- 4 Check the available storage space on the vRealize Log Insight vApp.

```
df -h
```

- 5 Export a vRealize Log Insight archive to a raw text file.

```
/usr/lib/loginsight/application/sbin/repo-exporter -d archive-file-directory output-file
```

For example,

```
/usr/lib/loginsight/application/sbin/repo-exporter -d /archive/2014/08/07/16/bd234b2d-  
df98-44ae-991a-e0562f10a49 /tmp/output.txt
```

- 6 Export a vRealize Log Insight archive message content in JSON format.

```
/usr/lib/loginsight/application/sbin/repo-exporter -F -d archive-file-directory output-file
```

For example,

```
/usr/lib/loginsight/application/sbin/repo-exporter -F -d /archive/2014/08/07/16/bd234b2d-  
df98-44ae-991a-e0562f10a49 /tmp/output.json
```

- 7 Close the SSH connection.

Restart the vRealize Log Insight Service

You can restart vRealize Log Insight by using the Cluster page in the Web user interface.

Caution Restarting vRealize Log Insight closes all active user sessions. Users of the vRealize Log Insight instance will be forced to log in again.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Cluster**.
- 2 Select a cluster node.
- 3 Click **Restart Primary** and click **Restart**.

What to do next

After vRealize Log Insight restarts, verify that syslog feeds from ESXi continue to arrive in vRealize Log Insight.

Power off the vRealize Log Insight Virtual Appliance

To avoid data loss when powering off a vRealize Log Insight primary or worker node, you must power off the node by following a strict sequence of steps.

You must power off the vRealize Log Insight virtual appliance before modifying the virtual hardware of the appliance.

You can power off the vRealize Log Insight virtual appliance by using the **Power > Shut Down Guest** menu option in the vSphere Client. You can also use the virtual appliance console or establish an SSH connection to the vRealize Log Insight virtual appliance and run a command.

Prerequisites

- If you plan to connect to the vRealize Log Insight virtual appliance by using SSH, verify that TCP port 22 is open.
- Verify that you have the root user credentials to log in to the vRealize Log Insight virtual appliance.

Procedure

- 1 Establish an SSH connection to the vRealize Log Insight vApp and log in as the root user.
- 2 To power off the vRealize Log Insight virtual appliance, run `shutdown -h now`.

What to do next

You can safely modify the virtual hardware of the vRealize Log Insight virtual appliance.

Download a vRealize Log Insight Support Bundle

If vRealize Log Insight does not operate as expected because of a problem, you can send a copy of the log and configuration files to VMware Support Services in the form of a support bundle.

Downloading a cluster-wide support bundle is necessary only if requested by VMware Support Services. You can create the bundle either statically, which uses disk space on the node, or by streaming, which uses no disk space on the node and stores the bundle on your initiating machine by default.

The storage location for the support bundle depends on the option that you use to get the support bundle:

Option	Support Bundle Location
API - POST appliance/vm-support-bundle	This is a streaming version with no local file.
API - POST appliance/support-bundle	/tmp/ui-support/
Web user interface - Static support bundle	/tmp/ui-support/

Option	Support Bundle Location
Web user interface - Streaming support bundle	This is a streaming version with no local file.
Command line - scripts/loginsight-support	The bundle is generated in the current directory.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Cluster**.
- 2 Under the Support header, click **Download Support Bundle**.

The vRealize Log Insight system collects the diagnostic information and sends the data to your browser in a compressed tarball.
- 3 Choose the method to create the bundle.
 - Select **Static support bundle** to create a bundle locally. Creation of the bundle consumes disk space on the node.
 - Select **Streaming support bundle** to start streaming the support bundle immediately. This method uses no disk space on the node.
- 4 Click **Continue**.
- 5 In the File Download dialog box, click **Save**.
- 6 Select a location to which you want to save the tarball archive and click **Save**.

What to do next

You can review the contents of log files for error messages. When you resolve or close issues, delete the outdated support bundle to save disk space.

Join or Leave the VMware Customer Experience Improvement Program

You can join or leave the VMware Customer Experience Improvement Program (CEIP) after deploying vRealize Log Insight.

You choose whether to participate in the CEIP when you install or upgrade vRealize Log Insight. After installation or upgrade, you can join or leave the program by following these steps.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Configuration > General**.
- 2 Under Customer Experience Improvement Program, select or clear the **Join the VMware Customer Experience Improvement Program** check box.

When selected, the option activates the program for your organization and sends data to VMware.

Note If you join the CEIP, vRealize Log Insight uses a third-party tool called Pendo to collect analytics cookies. Pendo collects data based on your interaction with the user interface by tracking where you click, to help VMware understand how vRealize Log Insight is used. This data is used to improve the VMware services and design them better. For more information, see the [Privacy Notice](#).

- 3 Click **Save**.

What to do next

After CEIP is enabled, when a user logs in to vRealize Log Insight, they see a banner at the top of their window that asks whether they want Pendo to collect data based on their interaction with the user interface.

- If the user clicks **Accept**, Pendo collects their data and sends it to VMware.
- If the user clicks **Decline**, Pendo does not collect their data.

Configure STIG Compliance for vRealize Log Insight

You can configure vRealize Log Insight to ensure STIG (Security Technical Implementation Guide) compliance for better security. This configuration includes the DoD (Department of Defense) consent agreement and additional password policy restrictions.

When you activate STIG compliance, vRealize Log Insight sends system notifications when:

- A new user is created or an Active Directory or VMware Identity Manager user logs in for the first time.
- The allocated log record storage volume reaches 75 percent of the maximum log record storage capacity of the repository. This notification is sent per node.

For more information, see [vRealize Log Insight System Notifications](#).

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Configuration > General**.
- 2 In the Security Technical Implementation Guide pane, perform the relevant actions:
 - Click the **DoD Consent Agreement** toggle button to display the mandatory DoD consent agreement when a user logs in to vRealize Log Insight. Select a login message type - a simple message on the login page, a login page with a check box to accept the consent before logging in, or a consent dialog box with a button to accept the DoD consent agreement. Add a consent title and description.

When the DoD consent agreement is activated, users can see the selected login message type when they log in.

- Click the **Password Policy Restriction** toggle button to activate further password restrictions for user accounts and additional rules to lock the accounts.

If the password policy restriction is activated, the following additional rules are applied to passwords:

- A password must contain at least 15 characters.
- A user can change their password only once in 24 hours.
- When a user changes their password, they cannot use the last five passwords.
- When a user changes their password, at least eight characters of the new password must be different from the old password.

If the password policy restriction is activated, a user account is locked if:

- The user has not logged in to vRealize Log Insight for 35 days.
- The user has not changed their password for 60 days.

Note Super Admin user accounts are never locked.

- 3 Click **Save**.

Activate FIPS for vRealize Log Insight

You can configure vRealize Log Insight to ensure FIPS (Federal Information Processing Standards) compliance for better security. This set of standards describes document processing, encryption algorithms, and other information technology standards for use within United States' non-military government agencies and by government contractors and vendors who work with

the agencies. When you activate FIPS, vRealize Log Insight uses the FIPS 140-2 standard with Security Level 1, which specifies basic security requirements to protect sensitive or valuable data.

For information about how different VMware products support FIPS 140-2, see <https://www.vmware.com/security/certifications/fips.html>.

vRealize Log Insight uses Apache Thrift for node-to-node communication. Activating FIPS automatically enables Thrift over SSL, which makes this communication more secure. However, you can also enable Thrift over SSL without activating FIPS. For more information, see <https://kb.vmware.com/s/article/82299>.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is <https://log-insight-host>, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Configuration > General**.
- 2 In the FIPS Mode pane, click the **Activate FIPS Mode** toggle button to activate FIPS.

Caution Once you activate FIPS, you cannot deactivate it.

- 3 Click **Save**.

Results

When you save the FIPS configuration, all the nodes are rebooted. You have to wait for a few minutes before you can use vRealize Log Insight again.

Managing vRealize Log Insight Clusters

5

You can add, remove, and upgrade the nodes of a vRealize Log Insight cluster.

Note vRealize Log Insight does not support WAN clustering. Current versions of vRealize Log Insight do not support WAN clustering (also called geo-clustering, high-availability clustering, or remote clustering). All nodes in the cluster should be deployed in the same Layer 2 LAN. In addition, the ports described in [Ports and External Interfaces](#) must be opened between nodes for proper communication.

This chapter includes the following topics:

- [Add a Worker Node to a vRealize Log Insight Cluster](#)
- [Remove a Worker Node from a vRealize Log Insight Cluster](#)
- [Working with an Integrated Load Balancer](#)

Add a Worker Node to a vRealize Log Insight Cluster

Deploy a new instance of the Log Insight virtual appliance and add it to an existing Log Insight primary node.

Procedure

1 [Deploy the vRealize Log Insight Virtual Appliance](#)

Download the vRealize Log Insight virtual appliance. VMware distributes the vRealize Log Insight virtual appliance as an `.ova` file. Deploy the vRealize Log Insight virtual appliance by using the vSphere Client.

2 [Join an Existing Deployment](#)

After you deploy and set up a standalone vRealize Log Insight node, you can deploy a new vRealize Log Insight instance and add it to the existing node to form a vRealize Log Insight cluster.

Deploy the vRealize Log Insight Virtual Appliance

Download the vRealize Log Insight virtual appliance. VMware distributes the vRealize Log Insight virtual appliance as an `.ova` file. Deploy the vRealize Log Insight virtual appliance by using the vSphere Client.

Prerequisites

- Verify that you have a copy of the vRealize Log Insight virtual appliance .ova file.
- Verify that you have permissions to deploy OVF templates to the inventory.
- Verify that your environment has enough resources to accommodate the minimum requirements of the vRealize Log Insight virtual appliance. See [Minimum Requirements](#).
- Verify that you have read and understand the virtual appliance sizing recommendations. See [Sizing the Log Insight Virtual Appliance](#).

Procedure

- 1 In the vSphere Client, select **File > Deploy OVF Template**.
- 2 Follow the prompts in the **Deploy OVF Template** wizard.
- 3 On the Select Configuration page, select the size of the vRealize Log Insight virtual appliance based on the size of the environment for which you intend to collect logs.

Small is the minimum requirement for production environments.

vRealize Log Insight provides preset VM (virtual machine) sizes that you can select from to meet the ingestion requirements of your environment. These presets are certified size combinations of compute and disk resources, though you can add extra resources afterward. A small configuration consumes the fewest resources while remaining supported. An extra small configuration is suitable only for demos.

Preset Size	Log Ingest Rate	Virtual CPUs	Memory	IOPS	Syslog Connections (Active)	
					TCP Connections	Events per Second
Extra Small	6 GB/day	2	4 GB	75	20	400
Small	30 GB/day	4	8 GB	500	100	2000
Medium	75 GB/day	8	16 GB	1000	250	5000
Large	225 GB/day	16	32 GB	1500	750	15,000

You can use a syslog aggregator to increase the number of syslog connections that send events to vRealize Log Insight. However, the maximum number of events per second is fixed and does not depend on the use of a syslog aggregator. A vRealize Log Insight instance cannot be used as a syslog aggregator.

Note If you select **Large**, you must upgrade the virtual hardware on the vRealize Log Insight virtual machine after the deployment.

- 4 On the Select Storage page, select a disk format.
 - **Thick Provision Lazy Zeroed** creates a virtual disk in a default thick format. Space required for the virtual disk is allocated when the virtual disk is created. The data remaining on the physical device is not erased during creation, but is zeroed out on demand later, on first write from the virtual appliance.

- **Thick Provision Eager Zeroed** creates a type of thick virtual disk that supports clustering features such as Fault Tolerance. Space required for the virtual disk is allocated at creation time. In contrast to the flat format, the data remaining on the physical device is zeroed out when the virtual disk is created. It might take much longer to create disks in this format than to create other types of disks.

Important Deploy the vRealize Log Insight virtual appliance with thick provisioned eager zeroed disks whenever possible for better performance and operation of the virtual appliance.

- **Thin Provision** creates a disk in thin format. The disk expands as the amount of data saved on it increases. If your storage device does not support thick provisioning disks or you want to conserve unused disk space on the vRealize Log Insight virtual appliance, deploy the virtual appliance with thin provisioned disks.

Note Shrinking disks on the vRealize Log Insight virtual appliance is not supported and might result in data corruption or data loss.

- 5 (Optional) On the Select networks page, set the networking parameters for the vRealize Log Insight virtual appliance. You can select the IPv4 or IPv6 protocol.

If you do not provide network settings, such as an IP address, DNS servers, and gateway information, vRealize Log Insight uses DHCP to set those settings.

Caution Do not specify more than two domain name servers. If you specify more than two domain name servers, all configured domain name servers are ignored in the vRealize Log Insight virtual appliance.

Use a comma-separated list to specify domain name servers.

- 6 (Optional) On the Customize template page, set network properties if you are not using DHCP.

Under Application, select the **Prefer IPv6 addresses** check box if you want to run the virtual machine in a dual stack network.

Caution Do not select the **Prefer IPv6 addresses** check box if you want to use pure IPv4 even with IPv6 supported in your network. Select the check box only if your network has a dual stack or pure stack support for IPv6.

- 7 (Optional) On the Customize template page, select **Other Properties** and set the root password for the vRealize Log Insight virtual appliance.

The root password is required for SSH. You can also set this password through the VMware Remote Console.

- 8 Follow the prompts to complete the deployment.

For information on deploying virtual appliances, see the *User's Guide to Deploying vApps and Virtual Appliances*.

After you power on the virtual appliance, an initialization process begins. The initialization process takes several minutes to complete. At the end of the process, the virtual appliance restarts.

- 9 Navigate to the **Console** tab and verify the IP address of the vRealize Log Insight virtual appliance.

IP Address Prefix	Description
https://	The DHCP configuration on the virtual appliance is correct.
http://	The DHCP configuration on the virtual appliance failed. <ol style="list-style-type: none"> a Power off the vRealize Log Insight virtual appliance. b Right-click the virtual appliance and select Edit Settings. c Set a static IP address for the virtual appliance.

What to do next

- If you want to configure a standalone vRealize Log Insight deployment, see [Configure New Log Insight Deployment](#).

The vRealize Log Insight Web interface is available at `https://log-insight-host/` where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Join an Existing Deployment

After you deploy and set up a standalone vRealize Log Insight node, you can deploy a new vRealize Log Insight instance and add it to the existing node to form a vRealize Log Insight cluster.

vRealize Log Insight can scale out by using multiple virtual appliance instances in clusters. Clusters enable linear scaling of ingestion throughput, increase query performance, and allow high-availability ingestion. In cluster mode, vRealize Log Insight provides primary and worker nodes. Both primary and worker nodes are responsible for a subset of data. Primary nodes can query all subsets of data and aggregate the results. You might require more nodes to support site needs. You can use from three to 18 nodes in a cluster. This means that a fully functional cluster must have a minimum of three healthy nodes. Most nodes in a larger cluster must be healthy. For example, if three nodes of a six-node cluster fail, none of the nodes functions fully until the failing nodes are removed.

Prerequisites

- In the vSphere Client, note the IP address of the worker vRealize Log Insight virtual appliance.
- Verify that you have the IP address or host name of the primary vRealize Log Insight virtual appliance.
- Verify that you have a user account on the primary vRealize Log Insight virtual appliance with the Super Admin role, a role that has the relevant permissions. See [Create and Modify Roles](#) for more information.

- Verify that the versions of the vRealize Log Insight primary and worker nodes are in sync. Do not add an older version vRealize Log Insight worker to a newer version vRealize Log Insight primary node.
- You must synchronize the time on the vRealize Log Insight virtual appliance with an NTP server. See [Synchronize the Time on the Log Insight Virtual Appliance](#).
- For information on supported browser versions, see the [vRealize Log Insight Release Notes](#).

Procedure

- 1 Use a supported browser to navigate to the web user interface of the vRealize Log Insight worker.

The URL format is `https://log_insight-host/`, where `log_insight-host` is the IP address or host name of the vRealize Log Insight worker virtual appliance.

The initial configuration wizard opens.

- 2 Click **Join Existing Deployment**.
- 3 Enter the IP address or host name of the vRealize Log Insight primary and click **Go**.

If the primary node provides an untrusted SSL certificate, a dialog box appears with the details of the certificate. Click **Accept** to send a request to the vRealize Log Insight primary node to join the existing deployment.

If you click **Cancel**, the join request is not sent to the primary node. You must accept the certificate to ensure that the worker node joins the existing deployment.

- 4 Click **Click here to access the Cluster Management page**.
- 5 Log in as a Super Admin user or a user with the relevant permissions.

The Cluster page loads.

- 6 Click **Allow**.

The worker node joins the existing deployment and vRealize Log Insight begins to operate in a cluster.

What to do next

- Add more worker nodes as needed. The cluster must have a minimum of three nodes.

Remove a Worker Node from a vRealize Log Insight Cluster

You can remove a worker node that is no longer working correctly from a vRealize Log Insight cluster. Do not remove worker nodes that are operating correctly from a cluster.

Warning Removing a node results in data loss. If a node must be removed, ensure that it has been backed up first. Avoid removing nodes within 30 minutes of adding new nodes.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Cluster**.
- 2 In the Workers table, find the node you want, click the pause icon, and click **Continue**.

The node is now in maintenance mode.

Note A node in maintenance mode continues to receive logs.

- 3 Click the cross icon to remove the node.

vRealize Log Insight removes the node from the cluster and sends out an email notification.

Working with an Integrated Load Balancer

The vRealize Log Insight integrated load balancer (ILB) supports vRealize Log Insight clusters and ensures that incoming ingestion traffic is accepted by vRealize Log Insight even if some vRealize Log Insight nodes become unavailable. You can also configure multiple virtual IP addresses.

Note External load balancers are not supported for use with vRealize Log Insight, including vRealize Log Insight clusters.

It is a best practice to include the ILB in all deployments, including single-node instances. Send queries and ingestion traffic to the ILB so that a cluster can easily be supported in the future if needed. The ILB balances traffic across nodes in a cluster and minimizes administrative overhead.

The ILB ensures that incoming ingestion traffic is accepted by vRealize Log Insight even if some vRealize Log Insight nodes become unavailable. The ILB also balances incoming traffic fairly among available vRealize Log Insight nodes. vRealize Log Insight clients, using both the web user interface and ingestion (through syslog or the Ingestion API), connect to vRealize Log Insight through the ILB address.

ILB requires that all vRealize Log Insight nodes be on the same Layer 2 networks, such as behind the same switch or otherwise able to receive ARP requests from and send ARP requests to each other. The ILB IP address must be set up so that any vRealize Log Insight node can own it and receive traffic for it. Typically, this means that the ILB IP address is in the same subnet as the physical address of the vRealize Log Insight nodes. After you configure the ILB IP address, try to ping it from a different network to ensure that it is reachable.

To simplify future changes and upgrades, you can have clients point to an FQDN that resolves to the ILB IP address, instead of pointing directly to the ILB IP address.

About Direct Server Return Configuration

The vRealize Log Insight load balancer uses a Direct Server Return (DSR) configuration. In DSR, all incoming traffic passes through the vRealize Log Insight node that is the current load balancer node. Return traffic is sent from vRealize Log Insight servers directly back to the client without needing to go through the load balancer node.

Multiple Virtual IP Addresses

You can configure up to 60 virtual IP addresses (VIPs) for the Integrated Load Balancer. You can also configure a list of static tags to each VIP so that each log message received from the VIP is annotated with the configured tags.

Activate the Integrated Load Balancer

When you activate the vRealize Log Insight integrated load balancer (ILB) on a vRealize Log Insight cluster, you must configure one or more virtual IP addresses.

The Integrated Load Balancer supports one or more virtual IP addresses (VIPs). Each VIP balances incoming ingestion and query traffic among available vRealize Log Insight nodes. It is a best practice to connect all vRealize Log Insight clients through a VIP and not directly to a node.

To simplify future changes and upgrades, you can have clients point to an FQDN that resolves to the ILB IP address, instead of pointing directly to the ILB IP address. vSphere and vRealize Operations integrations and alert messages use the FQDN if provided. Otherwise, they use the ILB IP address. vRealize Log Insight can resolve the FQDN to the given IP address, which means that the FQDN value you provide should match what is defined in DNS.

Prerequisites

- Verify that all vRealize Log Insight nodes and the specified Integrated Load Balancer IP address are on the same network.
- If you are using vRealize Log Insight with NSX, verify that the **Enable IP Discovery** option is deactivated on the NSX logical switch.
- The vRealize Log Insight primary and worker nodes must have the same certificates. Otherwise, the vRealize Log Insight Agents configured to connect through SSL reject the connection. When uploading a CA-signed certificate to vRealize Log Insight primary and worker nodes, set the Common Name to the ILB FQDN (or IP address) during the certificate generation request. See [Generate a Certificate Signing Request](#).
- You must synchronize the time on the vRealize Log Insight virtual appliance with an NTP server. See [Synchronize the Time on the Log Insight Virtual Appliance](#).

Procedure

- 1 Expand the main menu and navigate to **Management > Cluster**.
- 2 In the Integrated Load Balancer section, select **New Virtual IP Address** and enter the virtual IP (VIP) address to use for integrated load balancing.

3 (Optional) To configure multiple virtual IP addresses, click **New Virtual IP Address** and enter the IP address. You can choose to enter the FQDN and tags.

- Each vIP should be in the same subnet as at least one network interface on each node and the vIP must be available (not used by any other machine).
- Tags let you add fields with predefined values to events for easier querying. You can add multiple comma-separated tags. All events coming into the system through a vIP are marked with the vIP's tags.
- You can configure a list of static tags (key=value) for an ILB vIP, so that each log message received from the vIP is annotated with the configured tags.

4 (Optional) To activate vRealize Log Insight users to access the cluster through FQDN, point the clients to the FQDN instead of directly to the configured ILB IP address.

You might want to have clients point to an FQDN that resolves to an ILB IP address to simplify future changes and upgrades. You can have clients point to the FQDN instead of pointing directly to the ILB IP address.

5 Click **Save**.

The Integrated Load Balancer is managed by one node in the vRealize Log Insight cluster, declared the leader for that service. The current leader is denoted by the text (ILB) next to the node.

Configuring, Monitoring, and Updating vRealize Log Insight Agents

6

You can centrally manage the configuration of multiple vRealize Log Insight Agents, monitor their status, and activate auto-update.

This chapter includes the following topics:

- [Centralized Agent Configurations and Agent Groups](#)
- [Monitor the Status of the vRealize Log Insight Agents](#)
- [Activate Agent Auto-Update from the Server](#)

Centralized Agent Configurations and Agent Groups

Using the vRealize Log Insight server, you can configure agents from within the application's user interface. Agents poll the vRealize Log Insight server regularly to determine if new configurations are available.

You can group agents that require the same configuration. For example, you might group all vRealize Log Insight Windows agents separately from the vRealize Log Insight Linux agents.

In the **All Agents** menu, existing agent groups from content packs are listed automatically. The agents listed relate to content packs that you have already installed (for example the vSphere content pack), which use agent groups. All user-created agent groups appear under **Content Packs > Custom Content**, when you click **My Content** or **Shared Content**.

A user with at least a view-only admin role can export content packs with the agent group templates.

Note

- You cannot use the same content pack template more than once.
 - Content pack groups are read-only.
-

Only configuration sections beginning with `[winlog]`, `[filelog]`, `[journalldlog]` and `[parser]` are used in content packs. Additional sections are not exported as part of a content pack. Only single-line comments (lines beginning with `;`) under the `[winlog]`, `[filelog]`, and `[parser]` sections, are preserved in a content pack.

Note A single agent can belong to multiple agent groups and inherits all the settings from the centralized agent configuration.

You can create a configuration for the *All Agents* group as described in [Create an Agent Group](#). If an agent is configured from the combination of a centralized agent configuration and another configuration, the agent configuration is a result of merging both the configurations. For more information about merging, see [Agent Group Configuration Merging](#).

Note Use agent groups whenever possible, and avoid using the *All Agents* configuration unless needed.

See *Working with vRealize Log Insight Agents* for information about configuring agents and merging local and server-side configurations.

- [Agent Group Configuration Merging](#)

With agent groups, agents can be part of multiple groups and they can belong to the default group *All Agents*—activating centralized configuration.

- [Create an Agent Group](#)

You can create a group of agents that are configured with the same parameters.

- [Edit an Agent Group](#)

You can edit the name and description of an agent group, change the filters, and edit the configuration.

- [Add a Content Pack Agent Group as an Agent Group](#)

You can add an agent group that was defined as part of a content pack to your active groups and apply an agent configuration to the group.

- [Delete an Agent Group](#)

You can delete an agent group to remove it from the active groups list.

Agent Group Configuration Merging

With agent groups, agents can be part of multiple groups and they can belong to the default group *All Agents*—activating centralized configuration.

Merging occurs server-side—and the resulting configuration is merged with the agent-side configuration. The merged configuration is a result of the following rules.

- The individual group configurations have a higher priority and overrides the All Agents group settings.
- The All Agents group configuration overrides the local configuration.

- You cannot configure sections with the same name in different groups except with the All Agents groups. However, the sections in individual groups have a higher priority.

Note To prevent agent loss, the **hostname** and **port** parameters of an agent configuration cannot be changed centrally from the server.

The merged configuration is stored in the agent-side `liagent-effective.ini` file. For windows systems, this file is stored in `%ProgramData%\VMware\Log Insight Agent` and for Linux systems it is stored in `/var/lib/loginsight-agent/`.

Create an Agent Group

You can create a group of agents that are configured with the same parameters.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Agents**.
- 2 In the **All Agents** menu, Open the drop-down menu in the agent name field next to the Refresh button and click **New Group**.
- 3 Provide a unique name and a description for the agent group and click **New Group**.
The agent group is created and appears in the **All Agents** list, but is not saved.

- 4 Specify one or more filters for the agent group. To create a filter, specify a field name, an operator, and a value.

Filters can contain wildcards, such as * and ?. For example, you can select the OS filter `contains` and specify the value `windows` to identify all your Windows agents for configuration.

- a Choose one of the following fields to filter on:

- IP address
- hostname
- version
- OS

- b Select an operator from the drop-down menu and specify a value.

Operator	Description
matches	Finds strings that match the specified string and wildcard specification, where * means zero or more characters and ? means any single character. Prefix and postfix globbing is supported. For example, <code>*test*</code> matches strings such as <code>test123</code> or <code>my-test-run</code> .
does not match	Excludes strings that match the specified string and wildcard specification, where * means zero or more characters and ? means any single character. Prefix and postfix globbing is supported. For example, <code>test*</code> filters out <code>test123</code> , but does not exclude <code>mytest123</code> . <code>%test*</code> does not filter out <code>test123</code> , but does exclude <code>xtest123</code> .
starts with	Finds strings that start with the specified character string. For example, <code>test</code> finds <code>test123</code> or <code>test</code> , but not <code>my-test123</code> .
does not start with	Excludes strings that start with the specified character string. For example, <code>test</code> filters out <code>test123</code> , but not <code>my-test123</code> .

- 5 Specify the agent configuration values in the Agent Configuration area and click **Save New Group**.

Results

The agent configuration is applied after the next polling interval.

Edit an Agent Group

You can edit the name and description of an agent group, change the filters, and edit the configuration.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Agents**.
- 2 In the **All Agents** menu, select the name of the appropriate agent group and click the pencil icon to edit it.
- 3 Make your changes.

Item to Edit	Action
Name or Description	Make the necessary changes and click Save .
Filters or Configuration	Make the necessary changes and click Save Group .

Add a Content Pack Agent Group as an Agent Group

You can add an agent group that was defined as part of a content pack to your active groups and apply an agent configuration to the group.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Agents**.
- 2 In the **All Agents** menu, select an agent template for the Available Templates list.
- 3 Click **Copy Template** to copy the content pack agent group to your active groups.
- 4 Click **Copy**.
- 5 Select the required filters and click **Save new group**.

Results

The content pack agent group is added to the active groups and the agents are configured according to the filters that you specified.

Delete an Agent Group

You can delete an agent group to remove it from the active groups list.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Agents**.
- 2 In the **All Agents** menu, select the name of the agent group to delete, by clicking the X icon next to its name.
- 3 Click **Delete**.

Results

The agent group is removed from the active groups.

Monitor the Status of the vRealize Log Insight Agents

You can monitor the status of the vRealize Log Insight Windows and Linux agents and view current statistics about their operation.

Only those agents that are configured to send data through CFAPI appear on the Agents page. Agents that are configured to send data through syslog appear on the Hosts page, as with other syslog sources. If protocol changes from CFAPI to syslog, stats are not updated and represented on the Statistics page and Agent status is shown as "disconnected". Data represented there is being sent from LI Agents every 30 sec. vRealize Log Insight can display information for up to 15,000 agents.

If you change protocol from CFAPI to syslog, statistics cease to be updated and represented on the Agent page anymore and agent status is shown as disconnected. Data represented there is being sent from vRealize Log Insight agent every thirty seconds.

Note If you change a host IP for a vRealize Log Insight server in agent configuration, the agent resets page stats to zero.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a View Only Admin user, or a user associated with a role that has the relevant permissions.. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- ◆ Expand the main menu and navigate to **Management > Agents**.
Status information for each agent that sends data with CFAPI appears.

What to do next

You can use the information from the Agents page to monitor the operation of the installed vRealize Log Insight Windows and Linux agents. Click the agent hostname to go to the Explore Logs page for that host. After setting the hostname parameter from the LI Agent, and if default CFAPI proto is used and points to a Log Insight instance, you can monitor the connection by opening the Agents statistics page and verifying that the agent appears in the list of agents. You can use the links under the hostname column to navigate to the Insight Agents page and check the logs coming from the mentioned Agent.

Activate Agent Auto-Update from the Server

You can activate auto-update for agent groups or all agents from the vRealize Log Insight server.

Auto-update applies the latest available update to the selected agent group or all agents connected to the server. You can deactivate the auto-update feature for individual servers by editing the agent's `liagent.ini` file.

Note

- If `auto-update=yes` is changed to `auto-update=no` in the client, you cannot activate auto-update for the agent in the server.
 - If the default configuration in the client is not changed (`auto_update=yes`), the configuration in the server works. So, you can activate auto-update for all agents or agent groups using the relevant option.
-

For more information, see *Working with vRealize Log Insight Agents*.

Auto-update is deactivated for the server by default.

Prerequisites

- Ensure that agents have an active status are version 4.3 or later.
- Ensure that the client-side agent configuration has `auto_update` set to `yes`.

Procedure

- 1 Expand the main menu and navigate to **Management > Agents**.
- 2 Do either of the following.
 - To activate auto-update for all agents, in the upper-right corner of the Agents page, click the toggle control for **Enable auto-update for all agents**.
 - To activate auto-update for an agent group, select the agent group in the agent drop-down menu and click the toggle control for **Enable auto-update for selected Agent Group**.

Note This toggle control appears only when **Enable auto-update for all agents** is deactivated.

Results

Agents in the selected agent group or all agents connected to this server are updated when an update is present.

Monitoring vRealize Log Insight

7

You can monitor the vRealize Log Insight virtual appliance and the hosts and devices that send log events to vRealize Log Insight.

This chapter includes the following topics:

- [Check the Health of the vRealize Log Insight Virtual Appliance](#)
- [Monitor Hosts That Send Log Events](#)
- [Configure a System Notification to Report on Inactive Hosts](#)

Check the Health of the vRealize Log Insight Virtual Appliance

You can check available resources and active queries on the vRealize Log Insight virtual appliance, and view current statistics about the operation of vRealize Log Insight.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > System Monitor**.
- 2 If vRealize Log Insight is running as a cluster, click **Show resources for** and choose the node you want to monitor.

- Click the buttons on the System Monitor page to view the information that you need.

Option	Description
Resources	View information about the CPU, memory, IOPS (read and write activity), and storage usage on the vRealize Log Insight virtual appliance. The charts on the right represent historical data for the last 24 hours, and are refreshed at five-minute intervals. The charts on the left display information for the last five minutes, and are refreshed every three seconds.
Active Queries	View information about the queries that are currently active in vRealize Log Insight.
Statistics	View statistics about the log ingest operations and rates. To view more detailed statistics, click Show advanced statistics .

What to do next

You can use the information from the System Monitor page to manage resources on the vRealize Log Insight virtual appliance.

Monitor Hosts That Send Log Events

You can view a list of all hosts and devices that send log events to vRealize Log Insight and monitor them.

Entries in host tables expire three months after the last ingested event.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- Expand the main menu and navigate to **Management > Hosts**.

Note If you have configured a vCenter Server to send events and alarms, but have not configured the individual ESXi hosts to send logs, the Hostname column lists both the vCenter Server and the individual ESXi hosts as the source instead of listing just the vCenter Server.

What to do next

Users with a Super Admin role or relevant privileges can set up a system notification that is sent when hosts have been inactive. For more information, see [Configure a System Notification to Report on Inactive Hosts](#).

Configure a System Notification to Report on Inactive Hosts

vRealize Log Insight includes a built-in notification that you can use to learn about which hosts have been inactive for a specified period of time.

You activate the notification from the Hosts screen and specify a threshold that triggers the notification. You can apply this to all hosts or to smaller list of hosts.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where `log-insight-host` is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Management > Hosts**.

Note If you have configured a vCenter Server to send events and alarms, but have not configured the individual ESXi hosts to send logs, the Hostname column lists both the vCenter Server and the individual ESXi hosts as the source instead of listing just the vCenter Server.

- 2 Select **Inactive hosts notification** on the **Hosts** page to display a form for configuring when and for which hosts the notification should be sent.
- 3 Specify how long the host should be inactive before sending a notification.

Values can range from 10 minutes to the maximum of the host Time to Live (TTL) period, for which the default is three months.

For example

```
Send alert listing hosts that are inactive for 8 hours of last received event.
```

- 4 You control which hosts are monitored for notification with the **Inactive hosts notification acceptlist** setting. When this setting is not selected, notifications are sent for all inactive hosts.
 - To have notifications sent for all inactive hosts, clear the check box.
 - To have notifications sent for only some inactive hosts, select **Inactive hosts notification acceptlist** and specify the host names in a comma-separated list.
- 5 Click **Save**.

Results

System notifications are sent to the address specified on the **Configuration > SMTP** page when a host is inactive for longer than the specified limit.

Integrating vRealize Log Insight with VMware Products



vRealize Log Insight can integrate with other VMware products to use events and log data, and to provide better visibility into events that occur in a virtual environment.

Integration with VMware vSphere

You can set up vRealize Log Insight to connect to vCenter Server systems at two-minute intervals, and collect events, alarms, and tasks data from these vCenter Server systems. In addition, vRealize Log Insight can configure ESXi hosts via vCenter Server. See [Connect vRealize Log Insight to a vSphere Environment](#).

Integration with VMware vRealize Operations

You can integrate vRealize Log Insight with vRealize Operations and vRealize Operations Installable. Integrating with the Installable version requires additional changes to the vRealize Operations configuration. For information about configuring vRealize Operations Installable to integrate with vRealize Log Insight, see the *Log Insight Getting Started Guide*.

vRealize Log Insight and vRealize Operations can be integrated in two independent ways.

Notification Events

You can set up vRealize Log Insight to send notification events to vRealize Operations based on queries that you create. See [Configure vRealize Log Insight to Send Notifications and Metrics to vRealize Operations](#).

Launch in Context

Launch in context is a feature in vRealize Operations that lets you launch an external application via URL in a specific context. The context is defined by the active UI element and object selection. Launch in context lets the vRealize Log Insight adapter add menu items to a number of different views within the Custom user interface and the vSphere user interface of vRealize Operations. See [Activate Launch in Context for vRealize Log Insight in vRealize Operations](#).

Note Notification events do not depend on the launch in context configuration. You can send notification events from vRealize Log Insight to vRealize Operations even if you do not enable the launch in context feature.

Integration with VMware NSX Identity Firewall

You can set up vRealize Log Insight to integrate with an NSX Manager instance. Within the NSX Manager scope, you can use NSX Identity Firewall(IDFW) to create identity based firewall rules.

After configuring the integration, add predefined third-party identity providers such as GlobalProtect or ClearPass, or custom identity providers to the configuration. vRealize Log Insight parses the auth logs from these providers, extracts user ID-to-IP mapping information, and sends the data to NSX Manager. Based on this data, IDFW defines identity based firewall rules and applies the rules to users for access control.

If the environment changes, you can:

- Change, add, or remove vSphere systems from vRealize Log Insight.
- Change or remove the instance of vRealize Operations to which alert notifications are sent.
- Change or remove the NSX Manager instance.
- Change the passwords that are used to connect to vSphere systems, vRealize Operations, and NSX Identity Firewall.

,

This chapter includes the following topics:

- [Connect vRealize Log Insight to a vSphere Environment](#)
- [Configure vRealize Log Insight to Pull Events, Tasks, and Alarms from vCenter Server Instance](#)
- [Using vRealize Operations with vRealize Log Insight](#)
- [vRealize Operations Content Pack for vRealize Log Insight](#)
- [Integrate vRealize Log Insight with NSX Identity Firewall](#)

Connect vRealize Log Insight to a vSphere Environment

Before you configure vRealize Log Insight to collect alarms, events, and tasks data from your vSphere environment, you must connect vRealize Log Insight to one or more vCenter Server systems.

vRealize Log Insight can collect two types of data from vCenter Server instances and the ESXi hosts that they manage.

- Events, tasks, and alerts are structured data with specific meaning. If configured, vRealize Log Insight pulls events, tasks, and alerts from the registered vCenter Server instances.

- Logs contain unstructured data that can be analyzed in vRealize Log Insight. ESXi hosts or vCenter Server Appliance instances can push their logs to vRealize Log Insight through syslog.

Tip Tags let you add fields with pre-defined values to events coming from vSphere and configured ESXi hosts for easier querying. Note that comma (,) and equal (=) symbols are not supported in the tag values. The tags configured during vSphere integration can be assigned only to the logs coming from vCenter itself or from the logs coming from vCenter's ESXi hosts. Tagging is based on the ESXi host configuration through integration.

Prerequisites

- For the level of integration that you want to achieve, verify that you have user credentials with enough privileges to perform the necessary configuration on the vCenter Server system and its ESXi hosts.

Level of Integration	Required Privileges
Events, tasks, and alarms collection	<ul style="list-style-type: none"> ■ System.View <p>Note System.View is a system-defined privilege. When you add a custom role and do not assign any privileges to it, the role is created as a Read Only role with three system-defined privileges: System.Anonymous, System.View, and System.Read.</p>
Syslog configuration on ESXi hosts	<ul style="list-style-type: none"> ■ Host.Configuration.Change settings ■ Host.Configuration.Network configuration ■ Host.Configuration.Advanced Settings ■ Host.Configuration.Security profile and firewall

Note You must configure the permission on the top-level folder within the vCenter Server inventory, and verify that the **Propagate to children** check box is selected.

- Verify that you know the IP address or domain name of the vCenter Server system.
- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Integration > vSphere**.
- 2 Enter the IP address and service account credentials for a vCenter Server, and click **Test Connection**.

- 3 If the vSphere environment provides an untrusted SSL certificate, a dialog box appears with the details of the certificate. Click **Accept** to add the certificate to the truststores of all the nodes in the vRealize Log Insight cluster.

If you click **Cancel**, the certificate is not added to the truststores and the connection with the vSphere environment fails. You must accept the certificate for a successful connection.

- 4 (Optional) To register another vCenter Server, click **Add vCenter Server** and repeat steps 3 through 5.

Note Do not register vCenter Server systems with duplicate names or IP addresses. vRealize Log Insight does not check for duplicate vCenter Server names. You must verify that the list of registered vCenter Server systems does not contain duplicate entries.

- 5 Click **Save**.

If you did not test the connection and the vSphere environment provides an untrusted certificate, follow the instructions in step 4.

What to do next

- Collect events, tasks, and alarms data from the vCenter Server instance that you registered. See [Configure vRealize Log Insight to Pull Events, Tasks, and Alarms from vCenter Server Instance](#).
- Collect syslog feeds from the ESXi hosts that the vCenter Server manages. See [Configure an ESXi Host to Forward Log Events to vRealize Log Insight](#).

vRealize Log Insight as a Syslog Server

vRealize Log Insight includes a built-in syslog server that is constantly active when the vRealize Log Insight service is running.

The syslog server listens on ports 514/TCP, 1514/TCP, and 514/UDP, and is ready to ingest log messages that are sent from other hosts. Messages that are ingested by the syslog server become searchable in the vRealize Log Insight web user interface near real time. The maximum syslog message length that vRealize Log Insight accepts is 10 KB.

Syslog formats RFC-6587, RFC-5424, and RFC-3164 are supported.

Configure an ESXi Host to Forward Log Events to vRealize Log Insight

ESXi hosts or vCenter Server Appliance instances generate unstructured log data that can be analyzed in vRealize Log Insight.

You use the vRealize Log Insight Integration interface to configure ESXi hosts on a registered vCenter Server to push syslog data to vRealize Log Insight.

Caution Running parallel configuration tasks might result in incorrect syslog settings on the target ESXi hosts. Verify that no other user is configuring the ESXi hosts that you intend to configure.

A vRealize Log Insight cluster can use an integrated load balancer to distribute ESXi and vCenter Server Appliance syslog feeds between the individual nodes of the cluster.

For information on filtering syslog messages on ESXi hosts before messages are sent to vRealize Log Insight, see the *Configure Log Filtering on ESXi Hosts* topic in the [Setting Up ESXi](#) section, of the **vSphere Installation and Setup** guide.

For information on configuring syslog feeds from a vCenter Server Appliance, see [Configure vCenter Server to Forward Log Events to vRealize Log Insight](#).

Note vRealize Log Insight can receive syslog data from ESXi hosts version 5.5 and later.

Prerequisites

- Verify that the vCenter Server that manages the ESXi host is registered with your vRealize Log Insight instance. Or, you can register the ESXi host and configure vCenter Server in a single operation.
- Verify that you have user credentials with enough privileges to configure syslog on ESXi hosts.
 - **Host.Configuration.Advanced settings**
 - **Host.Configuration.Security profile and firewall**

Note You must configure the permission on the top-level folder within the vCenter Server inventory, and verify that the **Propagate to children** check box is selected.

Procedure

- 1 Expand the main menu and navigate to **Integration > vSphere**.
- 2 In the vCenter Server table, locate the vCenter Server instance that manages the ESXi host from which you want to receive syslog feeds and click **Edit**.
- 3 Select the **Configure ESXi hosts to send logs to Log Insight** check box in the opened edit view.

By default, vRealize Log Insight configures all reachable ESXi hosts of version 5.5 and later to send their logs through UDP.

- 4 (Optional) To modify the default configuration values, click **Advanced Options**.
 - To change the protocol for all ESXi hosts, select **Configure all ESXi hosts**, select a protocol, and click **OK**.

- To set up specific ESX hosts logging only or to change the protocol for selected ESXi hosts, use the following steps:
 - a Select **Configure specific ESXi hosts**.
 - b Select one or more hosts from the **Filter by host** list.
 - c Select the syslog protocol.

Note If you select `SSL` as your syslog protocol, you must manually download the vRealize Log Insight certificate and add it to the ESXi certificate store for each ESXi host you configure in step 4b.

- d Click **OK**.
- 5 (Optional) If you are using clusters, open the drop-down menu for the **Target** text box and select the hostname or IP address for the load balancer that distributes syslog feeds.
 - 6 Click **Save**.

What to do next

The ESXi host configurations are shown in the ESXi hosts configured column of the vCenter Server table. If the hosts are configured, you can click **View details** in the hosts configured column to view detailed information for the configured ESXi hosts.

Modify an ESXi Host Configuration for Forwarding Log Events to vRealize Log Insight

ESXi hosts or vCenter Server Appliance instances generate unstructured log data that can be analyzed in vRealize Log Insight.

You use the vRealize Log Insight Integration interface to configure ESXi hosts on a registered vCenter Server to push syslog data to vRealize Log Insight.

Caution Running parallel configuration tasks might result in incorrect syslog settings on the target ESXi hosts. Verify that no other user is configuring the ESXi hosts that you intend to configure.

After the initial configuration is set up, you can enable an option to periodically look for and automatically configure both existing and newly added vSphere ESXi hosts that are not configured yet. The currently configured protocol is used to configure the ESXi hosts automatically.

A vRealize Log Insight cluster can use an integrated load balancer to distribute ESXi and vCenter Server Appliance syslog feeds between the individual nodes of the cluster.

For information on filtering syslog messages on ESXi hosts before configured messages are sent to vRealize Log Insight, see the *Configure Log Filtering on ESXi Hosts* topic in the [Setting Up ESXi](#) section, of the **vSphere Installation and Setup** guide.

For information on configuring syslog feeds from a vCenter Server Appliance, see [Configure vCenter Server to Forward Log Events to vRealize Log Insight](#).

vRealize Log Insight can receive syslog data from ESXi hosts version 5.5 and later.

Prerequisites

- Verify that the vCenter Server that manages the ESXi host is registered with your vRealize Log Insight instance.
- Verify that you have user credentials with enough privileges to configure syslog on ESXi hosts.
 - **Host.Configuration.Advanced settings**
 - **Host.Configuration.Security profile and firewall**

Note You must configure the permission on the top-level folder within the vCenter Server inventory, and verify that the **Propagate to children** check box is selected.

Procedure

- 1 Expand the main menu and navigate to **Integration > vSphere**.
- 2 Select the **Configure ESXi hosts to send logs to Log Insight** check box.
- 3 Click **Advanced Options**.
- 4 To change the protocol for selected ESXi hosts, use the following steps:
 - a Select one or more hosts from the **Filter by host** list.
 - b Verify that the current protocol is what you want, or select another protocol.
 - c To enable the automatic configuration of ESXi hosts with the currently configured protocol, select **Automatically configure all ESXi hosts**. When enabled, vRealize Log Insight periodically looks for and configures both existing and newly added vSphere ESXi hosts that are not configured yet.
 - d Click **Configure** to begin the configuration of the selected hosts. The ESXi dialog box closes.
 - e Click **OK** in the message dialog box.
 - f If you changed the protocol setting, click **Save** in the main window after you close the **ESXi configuration** dialog box.
- 5 (Optional) If you are using clusters, you can specify a load balancer by opening the drop-down menu for the **Target** text box on the **vSphere Integration** page and selecting the hostname or IP address for the load balancer.

vRealize Log Insight Notification Events in vRealize Operations

You can configure vRealize Log Insight to send notification events to vRealize Operations based on the alert queries that you create.

When you configure a notification alert in vRealize Log Insight, you select a resource in vRealize Operations that is associated with the notification events. See [Add an Alert Query in Log Insight to Send Notification Events to vRealize Operations](#).

Listed below are sections of the vRealize Operations UI where notification Events appear.

- Home > **Recommendations** dashboard > **Top Health Alerts For Descendants** widget
- Home > **Alerts** Tab
- On all Custom Dashboards that include widgets with notification events

For additional information on where notification events appear, see the [VMware vRealize Operations Documentation Center](#).

Configure vCenter Server to Forward Log Events to vRealize Log Insight

The vSphere Integration collects task and events from vCenter Server, but not the low-level internal logs from each vCenter Server component. These logs are used by the vSphere Content Pack.

For vCenter Server 6.5 and later releases, the preferred way to use native integration from vRealize Log Insight and install a vRealize Log Insight agent on it. Alternatively, the configuration can be done through the vCenter Server Appliance Management Interface.

For more information about how to forward log events from vCenter Server, see the vSphere documentation about redirecting vCenter Server Appliance log files to another machine.

For earlier versions of vSphere, although the vCenter Server Appliance contains a syslog daemon that can be used to route logs, the preferred method is to install a vRealize Log Insight agent.

For information about installing vRealize Log Insight agents, see *Working with vRealize Log Insight Agents*.

The vSphere content pack contains agent groups defining specific log files to collect from vCenter Server installations. The configuration is visible at `https://LogInsightServerFqdnOrIP/contentpack?contentPackId=com.vmware.vsphere`.

For information about working with agent groups, see [Centralized Agent Configurations and Agent Groups](#)

For information about vCenter Server log file locations, see <http://kb.vmware.com/kb/1021804> and <http://kb.vmware.com/kb/1021806>.

Configure vRealize Log Insight to Pull Events, Tasks, and Alarms from vCenter Server Instance

Events, tasks, and alerts are structured data with specific meaning. You can configure vRealize Log Insight to collect alarms, events, and tasks data from one or more vCenter Server systems.

You use the Integration UI to configure vRealize Log Insight to connect to vCenter Server systems. The information is pulled from the vCenter Server systems by using the vSphere Web Services API and appears as a vSphere content pack in the vRealize Log Insight web user interface.

Note that vSphere 6.5 has a new native high availability solution. For more information on HA and the use of load balancers, see the white paper *What's New in VMware vSphere 6.5* available on www.vmware.com.

Note vRealize Log Insight can pull alarms, events, and tasks data only from vCenter Server 5.5 and later.

Prerequisites

Verify that you have user credentials with **System.View** privileges.

Note You must configure the permission on the top-level folder within the vCenter Server inventory, and verify that the **Propagate to children** check box is selected.

Procedure

- 1 Expand the main menu and navigate to **Integration > vSphere**.
- 2 In the vCenter Server table, locate the vCenter Server instance from which you want to collect data.
- 3 Select the **Collect vCenter Server events, tasks, and alarms** check box in the opened edit view.
- 4 Click **Save**.

Results

vRealize Log Insight connects to the vCenter Server every two minutes and ingests all new information since the last successful poll.

What to do next

- Analyze vSphere events using the vSphere content pack or custom queries.
- Enable vSphere content pack alerts or custom alerts.

Using vRealize Operations with vRealize Log Insight

Requirements for Integrating With vRealize Operations

As part of integrating vRealize Log Insight with vRealize Operations, you must specify credentials for vRealize Log Insight to authenticate against vRealize Operations.

vRealize Operations supports both local user accounts and multiple LDAP sources. Both the vRealize Operations and VMware Identity Manager integrations are configured by a vRealize Log Insight Super Admin user or a user with Integration permissions.

If your deployment uses a VMware Identity Manager integration in vRealize Log Insight, the VMware Identity Manager fallback URL (Redirect URL Host) and the target field on the vRealize Operations integration page should have the exact same value.

Prerequisites

Verify that the integration user account has permissions to manipulate objects in vRealize Operations. See [Minimum Required Permissions for a Local or Active Directory User Account](#).

Procedure

- ◆ To determine the user name for a local user account:
 - a Select **Access Control** from the vRealize Operations web interface.
 - b Identify or create the integration user. The Source Type field is **Local User**.
 - c Note the value of the **User Name** field. You specify this user name when you configure the integration in the vRealize Log Insight user interface.
- ◆ To determine the user name format for the LDAP user account that must be provided in vRealize Log Insight, follow these instructions:
 - a Select **Access Control** from the vRealize Operations web interface.
 - b Identify or create the integration user. Note the **User Name** and **Source Type** fields. For example, a user named `integration@example.com` from the source **Active Directory - ad**.
 - c Select **Authentication Sources**.
 - d Identify the authentication source corresponding to the **Source Type** from Step b. Note the **Source Display Name** field. For example, "ad".
 - e The user name entered in the vRealize Log Insight user interface is combined from Step 3 and Step 5, in the form `UserName@SourceDisplayName`. For example, `integration@example.com@ad`.

Minimum Required Permissions for a Local or Active Directory User Account

To integrate vRealize Log Insight with vRealize Operations, you must specify credentials for vRealize Log Insight to authenticate against vRealize Operations. To manipulate objects in vRealize Operations, a user account must have the required permissions.

If you assign permissions to a user for Launch in Context, the user can also configure alert integration. Use the information in the alert integration table to assign permissions for alert integration only.

Table 8-1. Alert Integration

Action	Permissions and Objects to Select
Create a custom role with the listed permissions.	<ol style="list-style-type: none"> 1 Administration -> Rest APIs <ol style="list-style-type: none"> a All other, Read, Write APIs b Read access to APIs
Assign the preceding role to the local or Active Directory user (new or existing) and select objects/object hierarchies to assign.	<ol style="list-style-type: none"> 1 Adapter Instance -> vRealizeOpsMgrAPI [Check All] 2 vSphere Hosts and Clusters [Check All] 3 vSphere Networking [Check All] 4 vSphere Storage [Check All]

Table 8-2. Launch in Context Integration

Action	Permissions and Objects to Select
Create a custom role with the listed permissions.	<ol style="list-style-type: none"> 1 Administration -> Rest APIs <ol style="list-style-type: none"> a All other, Read, Write APIs b Read access to APIs c Delete resource 2 Administration -> Configuration -> Manage Resource Relationships 3 Administration -> Resource Kind Management <ol style="list-style-type: none"> a Create b Edit 4 Administration -> Resource Management <ol style="list-style-type: none"> a Create b Delete c Read 5 Administration -> Access -> Access Control -> Add, Edit, or Delete a Role. <p>Note This permission is required for vRealize Operations versions 7.0 and earlier.</p>
Assign the preceding role to the local or Active Directory user (new or existing) and select objects/object hierarchies to assign.	Select Allow Access to All Objects in the System .

Configure vRealize Log Insight to Send Notifications and Metrics to vRealize Operations

You can configure vRealize Log Insight to send alert notifications and metrics to vRealize Operations.

You can integrate vRealize Log Insight with vRealize Operations and vRealize Operations Installable. Integrating with the Installable version requires additional changes to the vRealize Operations configuration. For information about configuring vRealize Operations Installable to integrate with vRealize Log Insight, see the *Log Insight Getting Started Guide*.

Integrating vRealize Log Insight alerts with vRealize Operations allows you to view all information about your environment in a single user interface.

You can send notification events from multiple vRealize Log Insight instances to a single vRealize Operations instance. You can activate launch in context for a single vRealize Log Insight instance per vRealize Operations instance.

vRealize Log Insight uses the vRealize Operations REST API to create resources and relationships in vRealize Operations for configuring the launch-in-context adapter.

Prerequisites

- Create an integration user account in vRealize Operations with required permissions. For more information, see [Requirements for Integrating With vRealize Operations](#).
- Verify that you know the IP address or host name of the target vRealize Operations instance.
- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Note In an environment running a vRealize Operations cluster with a configured load balancer, you can use the load balancer IP address if one is available.

Procedure

- 1 Expand the main menu and navigate to **Integration > vRealize Operations**.
- 2 Enter the IP address or host name of the primary node or the load balancer if one is configured. Use a vRealize Operations user credential and click **Test Connection**. vRealize Log Insight uses the credentials to push notification events to vRealize Operations. Make sure that the configured user has the minimum permissions required for the integration to work. See [Minimum Required Permissions for a Local or Active Directory User Account](#).
- 3 If vRealize Operations provides an untrusted SSL certificate, a dialog box appears with the details of the certificate. Click **Accept** to add the certificate to the truststores of all the nodes in the vRealize Log Insight cluster.

If you click **Cancel**, the certificate is not added to the truststores and the connection with vRealize Operations fails. You must accept the certificate for a successful connection.
- 4 In the vRealize Operations pane, select the relevant check boxes according to your preference:
 - To send alerts to vRealize Operations, select **Enable alerts integration**.
 - To let vRealize Operations open vRealize Log Insight and query for object logs, select **Enable launch in context**. For more information, see [Activate Launch in Context for vRealize Log Insight in vRealize Operations](#).

- To calculate and send metrics to vRealize Operations, select **Enable metric calculation**.

5 Click **Save**.

If you did not test the connection and vRealize Operations provides an untrusted certificate, follow the instructions in step 4.

What to do next

- See relevant pages in the vRealize Operations UI to view the notification events that vRealize Log Insight sends.

Activate Launch in Context for vRealize Log Insight in vRealize Operations

You can configure vRealize Operations to display menu items related to vRealize Log Insight and launch vRealize Log Insight with an object-specific query.

You can integrate vRealize Log Insight with vRealize Operations vApp and vRealize Operations Installable.

Integrating with vApp install and Installable (Windows, Linux) requires additional changes to the vRealize Operations configuration. See the topic about installing the vRealize Log Insight Management Pack (Adapter) in vRealize Operations 6.x and later in the [vRealize Log Insight documentation](#).

Note The vRealize Log Insight Management Pack is pre-installed in vRealize Operations 6.0 and later and does not require configuration changes.

vRealize Operations Installable (Windows version) is discontinued from vRealize Operations 6.5 and later.

Important One instance of vRealize Operations supports launch in context for only one instance of vRealize Log Insight. Because vRealize Log Insight does not check whether other instances are already registered with vRealize Operations, you might override the settings of another user.

Prerequisites

- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.
- Verify that you know the IP address or host name of the target vRealize Operations instance.
- Verify that you have the required user credentials. See [Minimum Required Permissions for a Local or Active Directory User Account](#).

- If you are using vRealize Operations 6.5 or later, use the procedure for enabling launch in context in *Configuring vRealize Log Insight with vRealize Operations* in the *vRealize Operations Configuration Guide*.

Procedure

- 1 Expand the main menu and navigate to **Integration > vRealize Operations**.
- 2 Enter the IP address or FQDN of the vRealize Operations primary node or load balancer if one is configured and click **Test Connection**.

Note For Launch in Context functionality, you must provide a vRealize Operations user with administrator privileges.

- 3 Click **Save**.

Results

vRealize Log Insight configures the vRealize Operations instance. This operation might take a few minutes.

Items related to vRealize Log Insight appear in the menus of vRealize Operations.

What to do next

Launch a vRealize Log Insight query from the vRealize Operations instance. See [vRealize Log Insight Launch in Context](#)

vRealize Log Insight Launch in Context

When you activate launch in context for vRealize Log Insight, a vRealize Log Insight resource is created in vRealize Operations.

The resource identifier contains the IP address of the vRealize Log Insight instance, and is used by vRealize Operations to open vRealize Log Insight.

Launch in Context in vRealize Operations 6.5 and Later

For information about enabling launch in context, see the [vRealize Operations information center](#).

Launch in Context in the vSphere User Interface of vRealize Operations 6.4 and Earlier

The launch in context options that are related to vRealize Log Insight appear in the **Actions** drop-down menu of the vSphere user interface. You can use these menu items to open vRealize Log Insight, and search for log events from an object in vRealize Operations.

The available launch in context action depends on the object that you select in vRealize Operations inventory. The time range of the queries is limited to 60 minutes before you click a launch in context option.

Table 8-3. Objects in vRealize Operations UI and Their Corresponding Launch in Context Options and Actions


Object selected in vRealize Operations	Launch in Context Option in the Actions Drop-Down Menu	Action in vRealize Operations	Action in vRealize Log Insight
World	Open vRealize Log Insight	Opens vRealize Log Insight.	vRealize Log Insight displays the Explore Logs page.
vCenter Server	Open vRealize Log Insight	Opens vRealize Log Insight.	vRealize Log Insight displays the Explore Logs page.
Data center	Search for logs in vRealize Log Insight	Opens vRealize Log Insight and passes the resource names of all host systems under the selected data center object.	vRealize Log Insight displays the Explore Logs page and performs a query to find log events that contain names of hosts within the data center.
Cluster	Search for logs in vRealize Log Insight	Opens vRealize Log Insight and passes the resource names of all host systems under the selected Cluster object.	vRealize Log Insight displays the Explore Logs page and performs a query to find log events that contain names of hosts within the cluster.
Host System	Search for logs in vRealize Log Insight	Opens vRealize Log Insight and passes the resource name of the selected Host object.	vRealize Log Insight displays the Explore Logs page and performs a query to find log events that contain the name of the selected Host system.
Virtual Machine	Search for logs in vRealize Log Insight	Opens vRealize Log Insight and passes the IP address of the selected virtual machine and the resource name of the related host system.	vRealize Log Insight displays the Explore Logs page and performs a query to find log events that contain the IP address of the virtual machine, and the name of the host where the virtual machine resides.

On the **Alerts** tab, if you select an alert and select **Search for logs in Log Insight** from the in-context menu, the time range of the query is limited to one hour before the alert is triggered. For example, if an alert was triggered at 2:00 PM, the query in vRealize Log Insight displays all log messages that occurred between 1:00 PM and 2:00 PM. This helps you identify events that might have triggered the alert.

You can open vRealize Log Insight from metric charts in vRealize Operations. The time range of the query that vRealize Log Insight runs matches the time range of the metric chart.

Note The time that you see in vRealize Log Insight and vRealize Operations metric charts might differ if the time setting of the virtual appliances is different.

Launch in Context in the vRealize Operations 6.4 and Earlier User Interface

The launch in context icon  appears on several pages of the user interface, but you can launch vRealize Log Insight only from the pages that display vRealize Log Insight notification events:

- The Alerts Overview page.
- The Alert Summary page of a vRealize Log Insight notification alert.
- The Alerts widgets on your dashboards, when a vRealize Log Insight notification alert is selected.

When you select a vRealize Log Insight notification event in the Custom user interface, you can choose between two launch in context actions.

Table 8-4. Launch in Context Options and Actions in vRealize Operations UI

Launch in Context Option in vRealize Operations	Action in vRealize Operations	Action in vRealize Log Insight
Open vRealize Log Insight	Opens vRealize Log Insight.	vRealize Log Insight displays the Dashboards page and loads the vSphere Overview dashboard.
Search for Logs in vRealize Log Insight	Opens vRealize Log Insight and passes the ID of the query that triggered the notification event.	vRealize Log Insight displays the Explore Logs page and performs the query that triggered the notification event.

When you select an alert that has not originated from vRealize Log Insight, the launch in context menu contains the **Search for VM and Host Logs in vRealize Log Insight** menu item. If you select this menu item, vRealize Operations opens vRealize Log Insight and passes the identifiers of the object that triggered the alert. vRealize Log Insight uses the resource identifiers to perform a search in the available log events.

Two-Way Launch in Context

Launch in Context is also available from vRealize Log Insight to vRealize Operations.

If you integrate vRealize Log Insight with vRealize Operations, you can perform a Launch in Context from a vRealize Log Insight event by selecting the gear icon to the left of the event and selecting the option to view in vRealize Operations.

For information about Launch in Context from vRealize Operations to vRealize Log Insight, see [vRealize Log Insight Launch in Context](#).

Procedure

- 1 In vRealize Log Insight, navigate to the **Explore Logs** page.
- 2 Locate an event that contains inventory mapping fields and hover over the event.

- 3 Click the gear icon and select **Open Analysis** in vRealize Operations from the drop-down menu.

A new browser tab opens directing you to the vRealize Operations instance integrated with vRealize Log Insight. Once you authenticate, you are directed to the **Environment > Analysis** section of vRealize Operations with the object selected.

Note When multiple vRealize Log Insight instances are connected to the same vRealize Operations instance, only the last vRealize Log Insight instance integrated with vRealize Operations has the Launch in Context feature. This also means that the Launch in Context feature is overridden whenever a vRealize Log Insight instance is integrated with a vRealize Operations instance that was previously integrated with a different vRealize Log Insight instance.

Deactivate Launch in Context for vRealize Log Insight in vRealize Operations

You can uninstall the vRealize Log Insight adapter from the vRealize Operations instance to remove menu items related to vRealize Log Insight from the vRealize Operations user interface.

You use the vRealize Log Insight UI to deactivate launch in context. If you do not have access to vRealize Log Insight or if the vRealize Log Insight instance is deleted before the connection with vRealize Operations is deactivated, you can unregister vRealize Log Insight from the Administration UI of vRealize Operations. See the Help in the vRealize Operations Administration portal.

Caution One instance of vRealize Operations supports launch in context for only one instance of vRealize Log Insight. If another instance of vRealize Log Insight has been registered after you registered the instance that you want to deactivate, the second instance overrides the settings of the first one without notifying you.

Prerequisites

- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Integration > vRealize Operations**.
- 2 Deselect the **Enable Launch in Context** check box.
- 3 Click **Save**.

Results

vRealize Log Insight configures the vRealize Operations instance to remove the vRealize Log Insight adapter. This operation might take a few minutes.

Add a DNS Search Path and Domain

You can add a DNS search path and domain to improve the vRealize Operations inventory matching.

Adding a DNS search path and domain improves matching when a virtual machine label and search domain resolve to the IP address of the host that sends log messages to vRealize Log Insight. For example, if you have a virtual machine named `linux_01` in vRealize Operations and the host name `linux_01.company.com` resolves to `192.168.10.10`, then adding a search domain allows vRealize Log Insight to recognize and match that resource.

Procedure

- 1 Perform a guest shutdown of the vRealize Log Insight virtual appliance.
- 2 Once the virtual machine is powered down, select **Edit Settings**.
- 3 Select the **vApp Options** tab.
- 4 From **vApp Options > Authoring**, click **Properties**.
- 5 Find the `vami.searchpath.VMware_vCenter_Log_Insight` and `vami.domain.VMware_vCenter_Log_Insight` keys.

If the keys do not exist, create them.

For the search path keys, use the following values:

- **Category** is **Networking Properties**
- **Label** is **DNS searchpath**
- **Key class ID** is **vami**
- **Key instance ID** is **VMware_vCenter_Log_Insight**.
- **Type** is **Static property**, String and **User configurable**.

For domain keys, use the same values, substituting **DNS domain** for **Label** and **domain** for **Key ID**.

- 6 Set the DNS search path and domain. For example, `ny01.acme.local`.
- 7 Power on the virtual appliance.

What to do next

After vRealize Log Insight boots, you can validate the DNS configuration by logging in and viewing the contents of the `/etc/resolv.conf` file. You should see the search and domain options near the end of the file.

Remove the vRealize Log Insight Adapter

When you activate launch in context on a vRealize Operations 6.2 and later instance, vRealize Log Insight creates an instance of the vRealize Log Insight adapter on the vRealize Operations instance.

The instance of the adapter remains in the vRealize Operations instance when you uninstall vRealize Log Insight. As a result, the launch in context menu items continue to appear in the actions menus, and point to a vRealize Log Insight instance that no longer exists.

To deactivate the launch in context functionality in vRealize Operations, you must remove the vRealize Log Insight adapter from the vRealize Operations instance.

You can use the command line utility cURL to send REST calls to vRealize Operations.

Note These steps are only required if Launch in Context was activated.

Prerequisites

- Verify that cURL is installed on your system. Note that this tool is preinstalled in the vRealize Operations virtual appliance and the steps can be performed from the appliance using IP address 127.0.0.1.
- Verify that you know the IP address or host name of the target vRealize Operations instance.
- Depending on the vRealize Operations license that you own, verify that you have the minimum credentials required to remove the management pack. See [Minimum Required Permissions for a Local or Active Directory User Account](#).

Procedure

- 1 In cURL, run the following query on the vRealize Operations virtual appliance to find the vRealize Log Insight adapter.

```
curl -k -u "admin" https://ipaddress/suite-api/api/adapterkinds/LogInsight/resourcekinds/LogInsightLogServer/resources
```

Where *admin* is the administrator login name and *ipaddress* is the IP address (or hostname) of the vRealize Operations instance. You are prompted to enter the password for the user: *admin*.

From the curl output find the GUID value assigned to the identifier: `<ops:resource creationTime="{TIMESTAMP}" identifier="{GUID}">`. You can use this GUID value in the below command that removes the adapter instance.

- 2 Run the following command to remove the vRealize Log Insight adapter.

```
curl -k -u "admin" -X DELETE https://ipaddress/suite-api/api/adapters/{GUID}
```

Where *admin* is the administrator login name and *ipaddress* is the IP address (or hostname) of the vRealize Operations instance. You are prompted to enter the password for the user: *admin*.

Results

vRealize Log Insight launch in context items are removed from the menus in vRealize Operations. For more information about launch in context, see the topic *vRealize Log Insight Launch in Context* of the vRealize Log Insight in-product help.

vRealize Operations Content Pack for vRealize Log Insight

The vRealize Operations content pack for vRealize Log Insight contains dashboards, extracted fields, saved queries, and alerts that are used to analyze all logs redirected from a vRealize Operations instance.

The vRealize Operations content pack provides a way to analyze all logs redirected from a vRealize Operations instance. The content pack contains dashboards, queries, and alerts to provide diagnostics and troubleshooting capabilities to the vRealize Operations administrator. The dashboards are grouped according to the major components of vRealize Operations such as Analytics, UI, and Adapters to provide better manageability. You can enable various alerts to send notification events in vRealize Operations and emails to administrators.

You can download the vRealize Operations content pack from [VMware Marketplace](#).

See [Working with Content Packs](#).

Integrate vRealize Log Insight with NSX Identity Firewall

Create a configuration to connect vRealize Log Insight to an NSX Manager instance. Within the NSX Manager scope, you can use NSX Identity Firewall(IDFW) to create identity based firewall rules.

Prerequisites

Verify that you are logged in to the vRealize Log Insight web user interface as an Enterprise Admin user. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.

Procedure

- 1 Expand the main menu and navigate to **Integration > NSX Identity Firewall**.
- 2 Enter the IP address or host name and admin credentials for an NSX Manager instance, and click **Test**.
- 3 If the NSX Manager instance provides an untrusted SSL certificate, a dialog box appears with the details of the certificate. Click **Accept** to add the certificate to the truststores of all the nodes in the vRealize Log Insight cluster.

If you click **Cancel**, the certificate is not added to the truststores and the connection with the NSX Manager instance fails. You must accept the certificate for a successful connection.

4 Click **Save**.

If you did not test the connection and the NSX Manager instance provides an untrusted certificate, follow the instructions in step 4.

What to do next

After configuring the integration, add predefined or custom identity providers to the configuration. For more information, see [Add an Identity Provider to an NSX Identity Firewall Integration](#).

Add an Identity Provider to an NSX Identity Firewall Integration

After configuring the integration of vRealize Log Insight with NSX Identity Firewall(IDFW), add a predefined third-party identity provider such as GlobalProtect or ClearPass to the configuration. You can also add a custom identity provider.

Prerequisites

- Verify that you are logged in to the vRealize Log Insight web user interface as a Super Admin user, or a user associated with a role that has the relevant permissions. See [Create and Modify Roles](#) for more information. The URL format of the web user interface is `https://log-insight-host`, where *log-insight-host* is the IP address or host name of the vRealize Log Insight virtual appliance.
- Verify that you have an IDFW integration configuration in vRealize Log Insight.

Procedure

- 1 Expand the main menu and navigate to **Integration > NSX Identity Firewall**.
- 2 Under Provider, click **New Provider**.
- 3 Enter the following information:

Option	Description
Name	A unique name for your identity provider.
Type	The identity provider type. You can select a predefined provider such as GlobalProtect or ClearPass, or a custom provider. If you select a predefined provider, the regex patterns for Username , IP Address , Domain , and Event Type are populated based on the provider. You can modify these values. If you select a custom provider, you must enter the regex patterns for Username , IP Address , and Domain .
Username	The regex pattern to identify the user name in the logs from your provider.
IP Address	The regex pattern to identify the IP address in the logs from your provider.
Domain	The regex pattern to identify the domain in the logs from your provider.

Option	Description
Event Type	The regex pattern to identify the event type in the logs from your provider. The event type for custom providers is Login and is not mandatory. If you want another value, enter a regex pattern to identify the event type.
Source	One or more source IP addresses or FQDNs. You can separate multiple entries by using commas. vRealize Log Insight parses the logs only from the sources that you enter for your provider, for optimal performance and security. <ul style="list-style-type: none"> ■ To ensure optimal performance, vRealize Log Insight applies the regex patterns only to the logs from the selected sources. ■ To ensure security, vRealize Log Insight sends only valid data from known sources to NSX Manager.

Note

- For custom providers that are sending logs through syslog, the regex patterns for the fields are applied to the message, and not the syslog headers.
- regex patterns are case sensitive.
- For regex field definitions, you must use Java-based regex.
- Forwarding logs from a vRealize Log Insight instance can change the source, which is used for provider configuration. Instead, send logs directly from the identity provider to vRealize Log Insight.
- Ensure that a provider source is unique within the scope of an NSX IDFW integration configuration.
- Predefined providers are configured for certain versions of the identity providers, which are available in the vRealize Log Insight user interface. The pre-populated regex pattern might not be accurate for other versions.

4 Click **Save**.

Results

vRealize Log Insight parses the auth logs from your identity provider, extracts user ID-to-IP mapping information, and sends the data to NSX Manager. Based on this data, IDFW defines identity based firewall rules and applies the rules to users for access control.

Example: regex Parsing for GlobalProtect and ClearPass Logs

- Consider the following log sample from a GlobalProtect provider:

```
Apr 8 14:35:19 PA-500-GW-1-EAT1
1,2021/04/08 14:35:19,009401010000,USERID,login,2049,2021/04/08
14:35:19,vsys1,10.20.30.40,vmware\john,UID-
SJC31,0,1,10800,0,0,agent,,79021111,0x8000000000000000,0,0,0,0,,PA-500-GW-1-
EAT1,1,,2021/04/08 14:35:28,1,0x80000000,vmware\john
```

The following table shows the mapping between the regex patterns and the values in the log sample, which vRealize Log Insight sends to NSX Manager.

Option	regex Pattern	Log Value
Username	<code>\\(\\w+)\\,</code>	john
IP Address	<code>\\,(\\d{1,3}\\.(\\d{1,3})\\.(\\d{1,3})\\.(\\d{1,3}))\\,</code>	10.20.30.40
Domain	<code>\\,(\\w+)\\</code>	vmware
Event Type	<code>USERID\\,(\\w+)\\,</code>	login

- Consider the following log sample from a ClearPass provider:

```
2021-08-19 13:47:46,797 10.10.100.10 Insight Logs
100001111 1 0 Auth.Username=smith,Auth.Service=SOF6 vrealize
SSID EAP-TLS Service,Auth.NAS-IP-Address=10.02.20.02,Auth.Host-MAC-
Address=111aaaaab10b,Auth.Protocol=RADIUS,Auth.Login-Status=9002,Auth.Enforcement-
Profiles=[Deny Access Profile]
```

The following table shows the mapping between the regex patterns and the values in the log sample, which vRealize Log Insight sends to NSX Manager.

Option	regex Pattern	Log Value
Username	<code>Username=(\\w+)</code>	smith
IP Address	<code>Address=(\\d{1,3}\\.(\\d{1,3})\\.(\\d{1,3})\\.(\\d{1,3}))</code>	10.02.20.02
Domain	<code>SOF6\\s+(\\w+)</code>	vrealize
Event Type	<code>Auth.(\\w+)-Status=</code>	Login

Security Considerations for vRealize Log Insight

9

Use vRealize Log Insight features to safeguard your environment from attack.

This chapter includes the following topics:

- Ports and External Interfaces
- vRealize Log Insight Configuration Files
- vRealize Log Insight Public Key, Certificate, and Keystore
- vRealize Log Insight License and EULA File
- vRealize Log Insight Log Files
- vRealize Log Insight User Accounts
- vRealize Log Insight Firewall Recommendations
- Security Updates and Patches

Ports and External Interfaces

vRealize Log Insight uses specific required services, ports, and external interfaces.

To view information about the ports and protocols of vRealize Log Insight, see the [VMware Ports and Protocols tool](#).

Communication Ports

vRealize Log Insight uses the communication ports and protocols listed in the Ports and Protocols tool. The required ports are organized based on whether they are required for sources, for the user interface, between clusters, for external services, or whether a firewall can safely block them. Some ports are used only if you enable the corresponding integration.

Note vRealize Log Insight does not support WAN clustering (also called geo-clustering, high-availability clustering, or remote clustering). All nodes in the cluster should be deployed in the same Layer 2 LAN. Also, communication ports must be opened between nodes for proper exchange of information.

vRealize Log Insight network traffic has several sources.

Admin Workstation

The machine that an administrator uses to manage the vRealize Log Insight virtual appliance remotely.

User Workstation

The machine on which a vRealize Log Insight user uses a browser to access the Web interface of vRealize Log Insight.

System sending logs

The endpoint that sends logs to vRealize Log Insight for analysis and search. For example, endpoints include ESXi hosts, virtual machines or any system with an IP address.

Log Insight Agents

The agent that resides on a Windows or Linux machine and sends operating system events and logs to vRealize Log Insight over APIs.

vRealize Log Insight appliance

Any vRealize Log Insight virtual appliance, primary, or worker where the vRealize Log Insight services reside. The base operating system of the appliance is SUSE 11 SP3.

Ports Required for Sources Sending Data

These ports must be open to network traffic from sources that send data to vRealize Log Insight, both for connections from outside the cluster and connections load-balanced between cluster nodes.

Ports Required for the User Interface

These ports must be open to network traffic that must use the vRealize Log Insight user interface, both for connections outside the cluster and connections load-balanced between cluster nodes.

Ports Required Between Cluster Nodes

These ports should only be open on a vRealize Log Insight primary node for network access from worker nodes for maximum security. These ports are in addition to the ports used for sources and UI traffic that are load-balanced between cluster nodes.

Ports Required for External Services

These ports must be open for outbound network traffic from vRealize Log Insight cluster nodes to remote services.

vRealize Log Insight Configuration Files

Some configuration files contain settings that affect vRealize Log Insight security.

Note All security-related resources are accessible by the root account. Protecting this account is critical to the security of vRealize Log Insight.

Table 9-1. Log Insight Configuration Files

File	Description
<code>/usr/lib/loginsight/application/etc/loginsight-config-base.xml</code>	The default system configuration for vRealize Log Insight.
<code>/storage/core/loginsight/config/loginsight-config.xml#number</code>	The modified (from the default) system configuration for vRealize Log Insight.
<code>/usr/lib/loginsight/application/etc/jaas.conf</code>	The configuration for active directory integration.
<code>/usr/lib/loginsight/application/etc/3rd_config/server.xml</code>	The system configuration for Apache Tomcat server.
<code>/storage/var/loginsight/apache-tomcat/conf/tomcat-users.xml</code>	The system configuration for Apache Tomcat server.
<code>/usr/lib/loginsight/application/3rd_party/apache-tomcat-*/conf/server.xml</code>	The system configuration for Apache Tomcat server.
<code>/usr/lib/loginsight/application/3rd_party/apache-tomcat-*/conf/tomcat-users.xml</code>	User information for Apache Tomcat server.

vRealize Log Insight Public Key, Certificate, and Keystore

The public key, the certificate, and the keystore of vRealize Log Insight are located on the vRealize Log Insight virtual appliance.

Note All security-related resources are accessible by the root account. Protecting this account is critical to the security of vRealize Log Insight.

- `/usr/lib/loginsight/application/etc/public.cert`
- `/usr/lib/loginsight/application/etc/loginsight.pub`
- `/usr/lib/loginsight/application/etc/3rd_config/keystore`
- `/usr/lib/loginsight/application/etc/truststore`
- `/usr/lib/loginsight/application/3rd_party/apache-tomcat-*/conf/keystore`

vRealize Log Insight License and EULA File

The end-user license agreement (EULA) and license file are located on the vRealize Log Insight virtual appliance.

Note All security-related resources are accessible by the root account. Protecting this account is critical to the security of vRealize Log Insight.

File	Location
License	/usr/lib/loginsight/application/etc/license/loginsight_dev.dlf
License	/usr/lib/loginsight/application/etc/license/loginsight_cpu.dlf
License	/usr/lib/loginsight/application/etc/license/loginsight_osi.dlf
License Key file	/usr/lib/loginsight/application/etc/license/loginsight_license.bak
End-user license agreement	/usr/lib/loginsight/application/etc/license/release/eula.txt

vRealize Log Insight Log Files

The files that contain system messages are on the vRealize Log Insight virtual appliance.

The following table lists each file and its purpose.

If you need information on log rotation or log archiving for these files, see [Log Rotation Schemes Supported by vRealize Log Insight Agents](#) in *Working with vRealize Log Insight Agents* and [Data Archiving](#) in *Administering vRealize Log Insight*.

File	Description
/var/log/vmware/loginsight/alert.log	Used to track information about user-defined alerts that have been triggered.
/var/log/vmware/loginsight/apache-tomcat/logs/*.log	Used to track events from the Apache Tomcat server.
/var/log/vmware/loginsight/cassandra.log	Used to track cluster configuration storage and replication in Apache Cassandra.
/var/log/vmware/loginsight/plugins/vsphere/li-vsphere.log	Used to trace events related to integration with vSphere Web Client.
/var/log/vmware/loginsight/loginsight_daemon_stdout.log	Used for the standard output of vRealize Log Insight daemon.
/var/log/vmware/loginsight/phonehome.log	Used to track information about trace data collection sent to VMware (if enabled).
/var/log/vmware/loginsight/pi.log	Used to track database start or stop events.
/var/log/vmware/loginsight/runtime.log	Used to track all run time information related to vRealize Log Insight.
/var/log/firstboot/stratavm.log	Used to track the events that occur at first boot and configuration of the vRealize Log Insight virtual appliance.

File	Description
/var/log/vmware/loginsight/systemalert.log	Used to track information about system notifications that vRealize Log Insight sends. Each alert is listed as a JSON entry.
/var/log/vmware/loginsight/systemalert_worker.log	Used to track information about system notifications that a vRealize Log Insight worker node sends. Each alert is listed as a JSON entry.
/var/log/vmware/loginsight/ui.log	Used to track events related to the vRealize Log Insight user interface.
/var/log/vmware/loginsight/ui_runtime.log	Used to track runtime events related to the vRealize Log Insight user interface.
/var/log/vmware/loginsight/upgrade.log	Used to track events that occur during a vRealize Log Insight upgrade.
/var/log/vmware/loginsight/usage.log	Used to track all queries.
/var/log/vmware/loginsight/vrops_integration.log	Used to track events related to the vRealize Operations integration.
/var/log/vmware/loginsight/watchdog_log*	Used to track the run time events of the watch dog process, which is responsible for restarting vRealize Log Insight if it is shut down for some reason.
/var/log/vmware/loginsight/api_audit.log	Used to track the API calls to Log Insight.
/var/log/vmware/loginsight/pattern_matcher.log	Used to track the pattern matching times and timeouts for field extraction.
/var/log/vmware/loginsight/audit.log	Used to track how vRealize Log Insight is used. For more information, see Audit Logs in vRealize Log Insight .

Log Messages Related to Security

The `ui_runtime.log` file contains user audit log messages in the following format.

- [2019-05-10 11:28:29.709+0000] ["https-jsse-nio-443-exec-9"/10.153.234.136 DEBUG] [com.vmware.loginsight.web.actions.misc.LoginActionBean] [User login success: vIDM: SAM=myusername, Domain=vmware.com, UPN=myusername@vmware.com]
- [2019-05-10 11:28:45.812+0000] ["https-jsse-nio-443-exec-3"/10.153.234.136 INFO] [com.vmware.loginsight.web.actions.misc.LoginActionBean] [User logged out: vIDM: SAM=myusername, Domain=vmware.com, UPN=myusername@vmware.com]
- [2019-05-10 11:28:29.709+0000] ["https-jsse-nio-443-exec-9"/10.153.234.136 DEBUG] [com.vmware.loginsight.web.actions.misc.LoginActionBean] [User login success: Active Directory User: SAM=myusername, Domain=vmware.com, UPN=myusername@vmware.com]

- [2019-05-10 11:28:45.812+0000] ["https-jsse-nio-443-exec-3"/10.153.234.136 INFO] [com.vmware.loginsight.web.actions.misc.LoginActionBean] [User logged out: Active Directory User: SAM=myusername, Domain=vmware.com,UPN=myusername@vmware.com]
- [2019-05-10 11:29:28.330+0000] ["https-jsse-nio-443-exec-6"/10.153.234.136 DEBUG] [com.vmware.loginsight.web.actions.misc.LoginActionBean] [User login success: Local User: Name=myusername]
- [2019-05-10 11:29:47.078+0000] ["https-jsse-nio-443-exec-10"/10.153.234.136 INFO] [com.vmware.loginsight.web.actions.misc.LoginActionBean] [User logged out: Local User: Name=myusername]
- [2019-05-10 11:29:23.559+0000] ["https-jsse-nio-443-exec-7"/10.153.234.136 WARN] [com.vmware.loginsight.web.actions.misc.LoginActionBean] [User login failure: Bad username/password attempt (username: incorrectUser)]
- [2019-05-10 11:45:37.795+0000] ["https-jsse-nio-443-exec-7"/10.153.234.136 INFO] [com.vmware.loginsight.web.actions.settings.UsersActionBean] [Created new user: Local User: Name=myusername]
- [2019-05-10 11:09:50.493+0000] ["https-jsse-nio-443-exec-6"/10.153.234.136 INFO] [com.vmware.loginsight.web.actions.settings.UsersActionBean] [Created new user: vIDM: SAM=myusername, Domain=vmware.com, UPN=myusername@vmware.com]
- [2019-05-10 11:47:05.202+0000] ["https-jsse-nio-443-exec-10"/10.153.234.136 INFO] [com.vmware.loginsight.web.actions.settings.UsersActionBean] [Created new group: (directoryType= VIDM, domain=vmware.com, group=vidm_admin)]
- [2019-05-10 11:58:11.902+0000] ["https-jsse-nio-443-exec-4"/10.153.234.136 INFO] [com.vmware.loginsight.web.actions.settings.UsersActionBean] [Removed groups: [class com.vmware.loginsight.database.dao.RBACADGroupDO<vidm/vmware.com/vidm_admin>]]

Some logs are available in debug level. For information about enabling the debug level for each node, see [Activate Debug Level for User Audit Log Messages](#).

Tip If you are an administrator, you can modify the logging level without restarting the vRealize Log Insight service. Go to `http://<your_Log_Insight_host>/internal/config`, update the value of the logging level for the relevant logs, and click **Save**. For example:

```
<self-logging>
  <logger name="root" level="INFO" />
</self-logging>
```

You can change the logging level to `OFF`, `FATAL`, `ERROR`, `WARN`, `INFO`, `DEBUG`, `TRACE`, or `ALL`.

Note Each node in a vRealize Log Insight cluster has its own `ui_runtime.log` file. You can examine the log files of the nodes to monitor the cluster.

Activate Debug Level for User Audit Log Messages

You can activate the debug level for user audit log messages to include the log messages in the `ui_runtime.log` file.

Prerequisites

Verify that you have the root user credentials to log in to the vRealize Log Insight virtual appliance.

Procedure

- 1 Navigate to the location `/usr/lib/loginsight/application/etc/` and open the configuration file `loginsight-config-base.xml` in any text editor.
- 2 Add a new logger for `LoginActionBean` with the `DEBUG` login level:

```
<loggers>
  <logger name="com.vmware.loginsight.web" level="<uiLevel>" additivity="false">
    <appenderRef ref="UI_RUNTIME_FILE"/>
  </loggers>
```

- 3 Save and close the `loginsight-config-base.xml` file.
- 4 Run the `service loginsight restart` command to apply your changes.

Tip You can also activate the debug level for user audit logs without restarting the vRealize Log Insight service. For more information, see [vRealize Log Insight Log Files](#).

Audit Logs in vRealize Log Insight

Audit logs track how vRealize Log Insight is used.

The audit log file `audit.log` is located in `/var/log/vmware/loginsight/`. This file logs the following actions:

Category	Logged Actions
User authentication	<ul style="list-style-type: none"> ■ Login, logout, and authentication failures.
Access control	<ul style="list-style-type: none"> ■ Creating, removing, and modifying users, groups, roles, and datasets.
Configuration	<ul style="list-style-type: none"> ■ Creating and removing forwarders, vSphere and vRealize Operations integrations, and so on. ■ Changing configuration values such as session timeout, SSL, SMTP configuration, and so on.
Content packs	<ul style="list-style-type: none"> ■ Installing, uninstalling, and upgrading. ■ Importing and exporting.
Dashboards and widgets	<ul style="list-style-type: none"> ■ Creating, removing, and modifying. ■ Sharing dashboards.
Administration	<ul style="list-style-type: none"> ■ Configuring agents and enabling auto-update. ■ Upgrading clusters. ■ Adding and removing certificates and licenses.
Alerts	<ul style="list-style-type: none"> ■ Creating, removing, and modifying.
Explore logs	<ul style="list-style-type: none"> ■ Creating, removing, and modifying snapshots and extracted fields.

vRealize Log Insight User Accounts

You must set up a system and a root account to administer vRealize Log Insight.

vRealize Log Insight Root User

vRealize Log Insight currently uses the root user account as the service user. No other user is created.

Unless you set the root password property during deployment, the default root password is blank. You must change the root password when you log in to the vRealize Log Insight console for the first time.

SSH is deactivated until the default root password is set.

The root password must meet the following requirements.

- Must be at least eight characters long
- Must contain at least one uppercase letter, one lowercase letter, one digit, and one special character
- Must not repeat the same character four times

vRealize Log Insight Admin User

When you start the vRealize Log Insight virtual appliance for the first time, vRealize Log Insight creates the admin user account for its Web user interface, which is a user associated with the Super Admin role.

The default password for admin is blank. You must change the admin password in the Web user interface during the initial configuration of vRealize Log Insight.

Active Directory Support

vRealize Log Insight supports integration with Active Directory. When configured, vRealize Log Insight can authenticate or authorize a user against Active Directory.

See [Enable User Authentication Through Active Directory](#).

Privileges Assigned to Default Users

The vRealize Log Insight service user has root privileges.

The Web user interface admin user has the Super Admin privileges only to the vRealize Log Insight web user interface.

vRealize Log Insight Firewall Recommendations

To protect sensitive information gathered by vRealize Log Insight, place the server or servers on a management network segment protected by a firewall from the rest of your internal network.

Required Ports

The following ports must be open to network traffic from sources that send data to vRealize Log Insight.

Port	Protocol
514/UDP, 514/TCP	Syslog
1514/TCP, 6514/TCP	Syslog-TLS (SSL)
9000/TCP	vRealize Log Insight Ingestion API
9543/TCP	vRealize Log Insight Ingestion API - TLS (SSL)

The following ports must be open to network traffic that must use the vRealize Log Insight UI.

Port	Protocol
80/TCP	HTTP
443/TCP	HTTPS

The following set of ports should only be open on a vRealize Log Insight primary node for network access from worker nodes for maximum security.

Port	Protocol
16520:16580/TCP	Thrift RPC
59778/TCP	log4j server
12543/TCP	database server

To view information about the ports and protocols of vRealize Log Insight, see the [VMware Ports and Protocols tool](#).

Security Updates and Patches

The vRealize Log Insight virtual appliance uses VMware Photon 3.0 as the guest operating system.

vRealize Log Insight 8.0 or later comes with a Photon operating system. Photon is more secure than the SLES operating system, which accompanies vRealize Log Insight 4.8 or earlier.

VMware releases patches to address security issues in maintenance releases. You can download these patches from the [vRealize Log Insight download page](#).

Before you apply an upgrade or patch to the guest operating system, consider the dependencies. See [Ports and External Interfaces](#).

Backup, Restore, and Disaster Recovery

10

To guard against expensive data center downtime, follow these best practices for performing vRealize Log Insight backup, restoration, and disaster recovery operations.

This chapter includes the following topics:

- [Backup, Restore, and Disaster Recovery Overview](#)
- [Using Static IP Addresses and FQDN](#)
- [Planning and Preparation](#)
- [Backup Nodes and Clusters](#)
- [Backup Linux or Windows Agents](#)
- [Restore Nodes and Clusters](#)
- [Changing Configurations After Restoration](#)
- [Verify Restorations](#)
- [Disaster Recovery](#)

Backup, Restore, and Disaster Recovery Overview

VMware delivers a comprehensive, integrated portfolio of Business Continuity and Disaster Recovery (BCDR) solutions that provide high availability, data protection, and disaster recovery.

Use the backup, restore, and disaster recovery information in this document for vRealize Log Insight components, including the primary node, worker node, and forwarder.

- For information about primary and worker cluster members, including configuration, log data, and customization, see [Backup Nodes and Clusters](#).
- For information about Linux or Windows agent local configuration, see [Backup Linux or Windows Agents](#).

The information in this document does not apply to the following tools and products. You must obtain information about these tools and products from multiple resources.

- Third-party tools used for backup, restore, and disaster recovery. For more information, see the vendor documentation.

- vSphere Data Protection, Site Recovery Manager, and Veritas NetBackup. For additional information on VMware BCDR solutions, see <https://www.vmware.com/solutions/business-continuity-disaster-recovery-draas.html>.
- Backup, restore, and disaster recovery capability for products that integrate with vRealize Log Insight.
 - vRealize Operations
 - vSphere Web Client server
 - ESXi hosts

Using Static IP Addresses and FQDN

You can use static IP addresses and FQDN to avoid risk during backup, restoration, and disaster recovery operations.

Static IP Addresses for vRealize Log Insight Cluster Nodes and Load Balancer

When you use static IP addresses for all nodes in a vRealize Log Insight cluster, you eliminate the need to update the IP addresses of the cluster nodes when the IP addresses change.

vRealize Log Insight includes all node IP addresses in each cluster node configuration file as described in [Knowledge Base article 2123058](#)

All products that integrate with vRealize Log Insight (ESXi, vSphere, vRealize Operations) use the cluster primary node's fully qualified domain name (FQDN) or IP address as the syslog target. Those products might use the FQDN or IP address of the load balancer, if configured, as the syslog target. Static IP addresses reduce the risk of constantly updating the syslog target IP address in multiple locations.

Provide static IP addresses and optional virtual IP addresses for the load balancer. When configuring an integrated load balancer, provide the optional FQDN for the virtual IP address. The FQDN is used when an IP address is not reachable for any reason.

FQDN for vRealize Log Insight Cluster Nodes and Worker Node

When you use an FQDN for all nodes in the vRealize Log Insight cluster, you can save time on post-restoration and recovery configuration changes, assuming that the same FQDN can be resolved on the recovery site.

For the primary node (load balancer when used), a fully resolvable FQDN is required. Otherwise, the ESXi hosts fail to feed the syslog messages to vRealize Log Insight or to any remote target.

For system notifications, vRealize Log Insight uses FQDN host names, if available, instead of IP addresses.

You can reasonably assume that only the underlying IP addresses change after backup and restoration or disaster recovery operations. Using FQDN eliminates the need to change the syslog target address (primary node FQDN or internal load balancer FQDN) on all the external devices that feed logs to the vRealize Log Insight cluster.

Verify that join requests from a vRealize Log Insight worker node use the FQDN of the vRealize Log Insight primary node.

The primary node host value in the configuration file on each of the nodes is based on the value used by the first worker node sending a join request. Using the FQDN of the primary node for the join request prevents making any manual changes to the primary node host value post-disaster recovery. Otherwise, the worker nodes cannot rejoin the primary node until the primary node host name is updated in the configuration files on all restored cluster nodes.

Planning and Preparation

Before implementing a backup, restoration, or disaster recovery procedure, review the planning and preparation information in this topic.

The following recommendations should be included in a backup, restoration, and disaster recovery plan.

Test Backup Operations

Perform a test run of the backup, restoration, and disaster recovery operations in a test or staging environment before performing these operations on a live production setup.

Perform a full backup of the entire vRealize Log Insight cluster. Do not rely on automatic procedures to back up individual files and configurations.

Verify Fixes

Verify that fixes are implemented and warnings and errors are addressed before performing backup, restoration, and disaster recovery operations. Backup, restoration, and disaster recovery tools usually provide visual validations and steps to ensure that backup, restoration, and disaster recovery configurations are successfully created.

Scheduling Backups

Depending on the cluster configuration, the first backup operation is usually a full backup. You should allow for an extended period of time for the first backup to complete. Successive backups, which can be incremental or full backups, finish relatively faster compared to the first backup operation.

Additional Documentation and Tools

Verify that you are following the documentation for allocating resources for the vRealize Log Insight backup, restoration, and disaster recovery tools.

Verify that you are following the tool-specific best practices and recommendations for third-party backup, restoration, and disaster recovery tools.

For virtual machines deployed using VMware products, use additional tools that can provide special features and configurations to support backup, restoration, and disaster recovery.

Forwarders and Clusters

For forwarders, apply the backup, restoration, and disaster recovery steps for the main vRealize Log Insight cluster. See [Restore Nodes and Clusters](#).

Based on the customer requirements, you might have a single or multiple vRealize Log Insight forwarders. In addition, the forwarders can be installed as a standalone node or as a cluster. For the purpose of backup, restoration, and disaster recovery operations, vRealize Log Insight forwarders are identical to the primary vRealize Log Insight cluster nodes and handled the same way.

Backup Nodes and Clusters

It is a best practice to set up scheduled backups or replication for vRealize Log Insight nodes and clusters.

Prerequisites

- Verify that no configuration problems exist on source and target sites before performing the backup or replication operations.
- Verify that cluster resource allocation is not at capacity.

In configurations with reasonable ingestion and query loads, the memory and swap usage can reach almost 100% capacity during backup and replication operations. Because the memory is near capacity in a live environment, part of the memory spike is due to the vRealize Log Insight cluster usage. Also, the scheduled backup and replication operations can contribute significantly to the memory spike.

Sometimes, worker nodes are disconnected momentarily for 1–3 minutes before rejoining primary nodes, possibly because of high memory usage.

- Reduce the memory throttling on vRealize Log Insight nodes by doing one or both of the following:
 - Allocate additional memory over the vRealize Log Insight recommended configurations.
 - Schedule the recurring backups during off-peak hours.

Procedure

- 1 Enable regular backup or replication of vRealize Log Insight forwarders by using the same procedures that you use for the vRealize Log Insight server.
- 2 Verify that the backup frequency and backup types are appropriately selected based on the available resources and customer-specific requirements.

- 3 If the resources are not a problem and if it is supported by the tool, enable concurrent cluster node backups to speed up the backup process.
- 4 Back up all the nodes at the same time.

For information about how to back up the nodes, see the *Backup and Restore, and Disaster Recovery* section in the [vRealize Suite documentation](#).

What to do next

Monitoring—As the backup is in progress, check any environment or performance problems in the vRealize Log Insight setup. Most backup, restore, and disaster recovery tools provide monitoring capabilities.

During the backup process, check all the relevant logs in the production system because the user interface might not display all problems.

Backup Linux or Windows Agents

You backup agents by backing up installation and configuration information on the server side. A separate backup of the agent node is not required.

Agents are typically installed on Linux or Windows systems that also used for some other application or service and might be included in existing backup procedures. A full file-level or block-level backup of the machine that includes the entire agent installation and its configuration is sufficient for recovery. Agents support both local and server-provided configuration.

If the agent is configured entirely from the vRealize Log Insight server, without any local change to the `liagent.ini` configuration file, you can avoid creating a backup of the agent installation at all. Instead, perform a fresh installation of the agent and retrieve the server backup.

If the agent has a custom local configuration, backup the `liagent.ini` file and restore it along with a fresh installation of the agent. If you use the agent nodes for more than installing the agent software and if these nodes need a full backup, follow the same backup procedure as for any other virtual machine.

If the agent configuration is done on the client side (on the agents) and if the agent nodes are used only for vRealize Log Insight agent software installation, making a backup of the agent configuration file is sufficient.

Prerequisites

Verify that the agent configuration is on the vRealize Log Insight server side.

Procedure

- 1 Backup the `liagent.ini` file.
- 2 Replace the file on the recovered agent or Linux or Windows machine with the backup file.

Restore Nodes and Clusters

Nodes must be restored in a specific order and some restoration scenarios might require manual configuration changes.

Depending on the tool used for restoring, you can restore the virtual machines to the same host, a different host on the same data center, or a different host on a target remote data center. See [Changing Configurations After Restoration](#)

Prerequisites

- Verify that the restored nodes are in the powered off state.
- Verify that the cluster instances are powered off before restoring the cluster to a new site.
- Verify that no split-brain behavior occurs when the same IP addresses and FQDNs are used on the recovery site.
- Verify that no one is accidentally using a partially working cluster on the primary site.

Procedure

- 1 Restore the primary node first before restoring worker nodes.
- 2 Restore worker nodes in any order.
- 3 (Optional) Restore the forwarders if configured.

Be sure the vRealize Log Insight server (the primary node and all the worker nodes in a cluster setup) are restored before restoring the forwarders.

- 4 Restore any recovered agents.

What to do next

- When restoring a vRealize Log Insight cluster, if the same IP addresses are used, verify that all restored node IP addresses and FQDNs are associated with their original counterparts.
For example, the following scenario fails. In a three-node cluster with nodes A, B, and C, node A is restored with IP address B, node B is restored with IP address C, and node C is restored with the IP address A.
 - If the same IP addresses are used for only a subset of restored nodes, verify that for these nodes, all restored images are associated with their original IP addresses.
- Most backup restoration and disaster recovery tools provide a monitoring view for watching the progress of the restoration operations for failures or warnings. Take appropriate actions on any identified problems.
- If manual configuration changes are required before the site can be fully restored, follow the guidelines in the [Changing Configurations After Restoration](#).
- When a successful restoration is finished, perform a spot check of the cluster that was restored.

Changing Configurations After Restoration

The recovery target and IP customizations applied during the backup configuration determine which manual configuration changes are required. You must apply configuration changes to one or more vRealize Log Insight nodes before the restored site can become fully functional.

Restore to the Same Host

Recovering a vRealize Log Insight cluster to the same host is straightforward and can be performed by any tool.

Prerequisites

Review important information about [Planning and Preparation](#).

Procedure

- 1 Power off the existing cluster before beginning the restoration operation. By default, the same IP addresses and FQDNs are used for the restored cluster nodes.
- 2 (Optional) Provide a new name for the cluster.

During the restoration process, the original copy of the cluster is overwritten with the restored version unless a new name is provided to the virtual machine.
- 3 (Optional) If possible, verify that all network, IP, and FQDN settings that are used for the production environment are preserved in the restored and recovered site.

What to do next

After a successful restoration and a sanity check, delete the old copy to conserve resources and to prevent accidental split-brain situations if a user powers on the old copy.

Restore to a Different Host

When you perform a restoration to a different host, you must make configuration changes on the vRealize Log Insight cluster.

Modifying the configuration files directly from the appliance console is not officially supported in vRealize Log Insight 3.0 and later releases. See [Knowledge Base article 2123058](#) for information about how to modify these files by using the Web UI interface.

These configuration changes are specific to vRealize Log Insight builds that can be used with any backup recovery tool.

Recovering to a different host requires manual configuration changes on the vRealize Log Insight cluster. You can assume that the restored vRealize Log Insight nodes have different IP addresses and FQDNs than their source counterparts from which a backup was taken.

Prerequisites

Review important information about [Planning and Preparation](#).

Procedure

- 1 List all new IP addresses and FQDNs that were assigned to each vRealize Log Insight node.
- 2 Make the following configuration changes on the primary node by using the steps described in [Knowledge Base article 2123058](#).
 - a In the vRealize Log Insight config section, look for lines that resemble the following lines.

```
<distributed overwrite-children="true">
  <daemon host="prod-es-vrli1.domain.com" port="16520" token="c4c4c6a7-f85c-4f28-
a48f-43aeea27cd0e">
    <service-group name="standalone" />
  </daemon>
  <daemon host="192.168.1.73" port="16520" token="a5c65b52-
aff5-43ea-8a6d-38807ebc6167">
    <service-group name="workernode" />
  </daemon>
  <daemon host="192.168.1.74" port="16520" token="a2b57cb5-
a6ac-48ee-8e10-17134e1e462e">
    <service-group name="workernode" />
  </daemon>
</distributed>
```

The code shows three nodes. The first node is the primary node, which shows `<service-group name=standalone>`, and the remaining two nodes are worker nodes, which show `<service-group name="workernode">`

- b For the primary node, in the newly recovered environment, verify that the DNS entry that was used in the pre-recovery environment can be reused.
 - If the DNS entry can be reused, update only the DNS entry to point to the new IP address of the primary node.
 - If the DNS entry cannot be reused, replace the primary node entry with a new DNS name (pointing to the new IP address).
 - If the DNS name cannot be assigned, as a last option, update the configuration entry with the new IP address.
- c Update the worker node IP addresses as well to reflect the new IP addresses.

- d In the same configuration file, verify that you have entries that represent NTP, SMTP, and database and appenders sections.

```
<ntp>
  <ntp-servers value="ntp1.domain.com, ntp2.domain.com" />
</ntp>

<smtp>
  <server value="smtp.domain.com" />
  <default-sender value="source.domain.com@domain.com" />
</smtp>

<database>
  <password value="xserttt" />
  <host value="vrli-node1.domain.com" />
  <port value="12543" />
</database>
```

- If the configured NTP server values are no longer valid in the new environment, update these values in the `<ntp>...</ntp>` section.
 - If the configured SMTP server values are no longer valid in the new environment, update these values in the `<smtp>...</smtp>` section.
 - Optionally, change the `default-sender` value in the SMTP section. The value can be any value but as a good practice, represent the source from where the email is being sent.
 - In the `<database>...</database>` section, change the host value to point to the primary node FQDN or IP address.
- e In the same configuration file, update the vRealize Log Insight ILB configuration section.

```
<load-balancer>
<leadership-lease-renewal-secs value="5" />
<high-availability-enabled value="true" />
<high-availability-ip value="10.158.128.165" />
<high-availability-fqdn value="LB-FQDN.eng.vmware.com" />
<layer4-enabled value="true" />
<ui-balancing-enabled value="true" />
</load-balancer>
```

- f Under the `<load-balancer>...</load-balancer>` section, update the `high-availability-ip` value if it is different from the current setting.
- g Ensure that you also update the FQDN of the load balancer.

- h Restart from the Web UI through the **Cluster** subtab on the **Administration** tab. For each node listed, select its host name or IP address to open the details panel and click **Restart Log Insight**.

The configuration changes are automatically applied to all cluster nodes.

- i Wait 2 minutes after the vRealize Log Insight service starts to allow enough time for the Cassandra service to start before bringing other worker nodes online.

What to do next

Verify that the restored vRealize Log Insight nodes have been assigned different IP addresses and FQDNs than their source counterparts from which a backup was taken.

Verify Restorations

You must verify that all restored vRealize Log Insight clusters are fully functional.

Prerequisites

Confirm that the backup and restoration process is finished before verifying node and cluster configurations.

Procedure

- 1 Log in to vRealize Log Insight using the internal load balancer (ILB) IP address or the FQDN (if configured).
- 2 Expand the main menu and navigate to **Management > Cluster**.
- 3 Verify the following:
 - a Verify that you can access all individual cluster nodes using the respective IP addresses or FQDNs.
 - b Verify the status of cluster nodes from the cluster page and ensure that the ILB, if configured, is also in an active state.
 - c Verify the vSphere integration. If necessary, reconfigure the integration. Reconfiguration is required when the ILB or the primary node IP address or FQDN is changed post-recovery.
 - d Verify the vRealize Operations integration and reconfigure again if needed.
 - e Verify that all content packs and UI features are functioning properly.
 - f Verify that vRealize Log Insight forwarders and agents are functioning properly, if configured.
- 4 Verify that other key features of vRealize Log Insight are functioning as expected.

What to do next

Make any necessary adjustments to your backup and recovery plan to address any issues that may have been identified during your backup, restoration, and verification operations.

Disaster Recovery

A well-documented and well-tested recovery plan is essential to quickly returning a cluster to a working state.

The choice of replication type is critical when configuring a virtual machine for disaster recovery. Consider the Recovery Point Objective (RPO), the Recovery Time Objective (RTO), and the cost and scalability when deciding on a replication type.

In a disaster recovery scenario, sometimes you cannot restore to the same site if the primary site is fully down. But based on the option you choose, some manual steps are required to fully restore and return the vRealize Log Insight cluster to a running state.

Unless the vRealize Log Insight cluster is fully down and inaccessible, verify that the cluster instances are powered off before restoring the cluster to a new site.

During an outage or disaster, recover the vRealize Log Insight cluster as soon as possible.

Troubleshooting vRealize Log Insight

11

You can solve common problems related to vRealize Log Insight administration before calling VMware Support Services.

This chapter includes the following topics:

- Cannot Log In to vRealize Log Insight on Internet Explorer
- vRealize Log Insight Runs Out of Disk Space
- Import of Archived Data Might Fail
- Use the Virtual Appliance Console to Create a Support Bundle of vRealize Log Insight
- Reset the Admin User Password
- Reset the Root User Password
- Alerts Could Not Be Delivered to vRealize Operations
- Unable to Log In Using Active Directory Credentials
- SMTP does not work with STARTTLS option activated
- Upgrade Fails Because the Signature of the .pak file Cannot Be Validated
- Upgrade Fails with an Internal Server Error
- Missing vmw_object_id Field in the First Log Message After Integration with VMware Products

Cannot Log In to vRealize Log Insight on Internet Explorer

vRealize Log Insight authentication fails on Internet Explorer.

Problem

The vRealize Log Insight web client requires LocalStorage or DOM storage support, but your filesystem integrity level prohibits Internet Explorer from using LocalStorage. The console and debugger display the error `SCRIPT5: Access is Denied`.

Cause

vRealize Log Insight cannot access LocalStorage or DOM Storage support. Internet Explorer keeps this storage data in the folder set with the CachePath parameter, nominally at %USERPROFILE%\AppData\LocalLow\Microsoft\Internet Explorer\DOMstore. If this folder has an integrity level other than low, Internet Explorer is unable to use LocalStorage.

Solution

You can use the following command to set the integrity level of a user account.

```
icacls %userprofile%\Appdata\LocalLow /t /setintegritylevel (OI)(CI)L
```

vRealize Log Insight Runs Out of Disk Space

A vRealize Log Insight primary or worker node might run out of disk space if you are using a small virtual disk, and archiving is not activated.

Problem

vRealize Log Insight runs out of disk space if the rate of incoming logs exceeds 3 percent of the storage space per minute, or when vRealize Log Insight cannot delete the oldest buckets from the storage.

Cause

In normal situations, vRealize Log Insight never runs out of disk because every minute it checks if the free space is less than 3 percent. If the free space on the vRealize Log Insight virtual appliance drops below 3 percent, old data buckets are retired.

If archiving is activated, vRealize Log Insight archives the bucket before marking it as archived and retiring in future. If the free space is filled before the old bucket is archived and retired, vRealize Log Insight runs out of disk.

Solution

Verify whether the data archival location is available and has enough free space. See [Data Archiving](#).

Note If none of the solutions are applicable, contact customer support.

Import of Archived Data Might Fail

The import of archived data might fail if the vRealize Log Insight vRealize Log Insight virtual appliance runs out of disk space.

Problem

The vRealize Log Insight repository import utility does not check for available disk space on the vRealize Log Insight virtual appliance. Therefore, the import of archived logs might fail if the virtual appliance runs out of disk space.

Solution

Increase the storage capacity of the vRealize Log Insight virtual appliance and start the import again. Note, though, that information that was successfully imported before failure will be duplicated.

Use the Virtual Appliance Console to Create a Support Bundle of vRealize Log Insight

If you cannot access the vRealize Log Insight Web user interface, you can download the support bundle by using the virtual appliance console or after establishing an SSH connection to the vRealize Log Insight virtual appliance.

Prerequisites

- Verify that you have the root user credentials to log in to the vRealize Log Insight virtual appliance.
- If you plan to connect to the vRealize Log Insight virtual appliance by using SSH, verify that TCP port 22 is open.

Procedure

- 1 Establish an SSH connection to the vRealize Log Insight vApp and log in as the root user.
- 2 To generate the support bundle, run `loginsight-support`.

To generate a support bundle and include only files that have changed within a certain time period, execute the `loginsight-support` command with the `--days` constraint. For example, `--days=1` will only include files that have changed within 1 day.

Results

The support information is collected and saved in a `*.tar.gz` file that has the following naming convention: `loginsight-support-YYYY-MM-DD_HHMMSS.xxxxx.tar.gz`, where `xxxxx` is the process ID under which the `loginsight-support` process ran.

What to do next

Forward the support bundle to VMware Support Services as requested.

Reset the Admin User Password

If an admin user forgets the password to the Web user interface, the account becomes unreachable.

Prerequisites

- Verify that you have the root user credentials to log in to the vRealize Log Insight virtual appliance.
- To enable SSH connections, verify that TCP port 22 is open.

Problem

If vRealize Log Insight has only one admin user and the admin user forgets the password, the application cannot be administered. If an admin user is the only user of vRealize Log Insight, the whole Web user interface becomes inaccessible.

Cause

If a user does not remember their current password, vRealize Log Insight does not provide a user interface for admin users to reset their own passwords.

Note Admin users who can log in can reset the password of other admin users. Reset the admin user password only when all admin user accounts' passwords are unknown.

Solution

- 1 Establish an SSH connection to the vRealize Log Insight virtual appliance and log in as the root user.
- 2 Run the script that resets the admin user password:

```
li-reset-admin-passwd.sh
```

The script resets the admin user password, generates a new password, and displays it on the screen.

What to do next

Log in to the vRealize Log Insight Web user interface with the new password and change the admin user password.

Reset the Root User Password

If you forget the password of the root user, you can no longer establish SSH connections or use the console of the vRealize Log Insight virtual appliance.

You might not be able to log in as root for various reasons including:

- You have not changed the default password. By default, vRealize Log Insight sets a blank password for the root user and deactivates SSH access. Once the password is set, SSH access for the root user is activated.
- You set an SSH key during the deployment of the vRealize Log Insight virtual appliance. If an SSH key is specified through OVF, then password authentication is deactivated. Either log in with the set SSH key or see the solution steps below.
- You entered the password incorrectly multiple times and you are now temporarily locked out. In this case, entering the correct password will not get you in until the lockout period has elapsed. You can either wait or restart the virtual appliance.

Because the vRealize Log Insight virtual appliance resides on a Photon OS, the following steps describe how to reset the root password on a Photon OS machine.

Problem

If you cannot establish SSH connections or use the console of the vRealize Log Insight virtual appliance, you cannot accomplish some of the administration tasks, nor can you reset the password of the admin user.

Solution

- 1 Restart the vRealize Log Insight virtual machine running Photon OS.
- 2 As the Photon OS restarts and the splash screen appears, enter the letter `e` immediately to go to the GNU GRUB edit menu.

Note Because Photon OS reboots quickly, you will not have much time to enter `e`. In vSphere and Workstation, you might have to bring the console into focus by clicking the console window before it accepts input from your keyboard.

- 3 In the GNU GRUB edit menu, at the end of the line that starts with `linux`, enter a space and add the following code:

```
rw init=/bin/bash
```

- 4 Press F10 to open the command prompt.
- 5 Mount the root file system.

```
mount -o remount,rw /
```

- 6 Run the following command:

```
passwd
```

- 7 Follow the instructions to enter and reenter a new root password that conforms to the password complexity rules of Photon OS. Ensure that you remember the password.

- When you see a message saying that the password has been updated, run the following command:

```
umount /
```

- Run the following command.

```
reboot -f
```

Note You must include the `-f` option to force a reboot. Otherwise, the kernel enters a state of panic.

What to do next

After vRealize Log Insight reboots, validate that you can log in with the new root user password.

Alerts Could Not Be Delivered to vRealize Operations

vRealize Log Insight notifies you if an alert event cannot be sent to vRealize Operations. vRealize Log Insight retries sending the alert every minute until the problem is resolved.

Problem

A red sign with an exclamation mark appears in the vRealize Log Insight toolbar when an alert could not be delivered to vRealize Operations.

Cause

Connectivity problems prevent vRealize Operations vRealize Log Insight from sending alert notifications to vRealize Operations.

Solution

- ◆ Click on the red icon to open the list of error messages, and scroll down to view the latest message.
The red sign disappears from the toolbar when you open the list of error messages, or if the problem is resolved.
- ◆ To fix the connectivity problem with vRealize Operations, try the following.
 - Verify that the vRealize Operations vApp is not shut down.
 - Verify that you can connect to vRealize Operations via the **Test Connection** button in the **Integration > vRealize Operations** page of the vRealize Log Insight Web user interface.
 - Verify that you have the correct credentials by logging directly into vRealize Operations.
 - Check vRealize Log Insight and vRealize Operations logs for messages related to connectivity problems.
 - Verify that no alerts are filtered out in vRealize Operations vSphere User Interface.

Unable to Log In Using Active Directory Credentials

You cannot log in to the vRealize Log Insight Web user interface when you use Active Directory credentials.

Problem

You cannot log in to vRealize Log Insight by using your Active Directory domain user credentials, despite that an administrator has added your Active Directory account to vRealize Log Insight.

Cause

The most common causes are expired passwords, incorrect credentials, connectivity problems, or lack of synch between the vRealize Log Insight virtual appliance and Active Directory clocks.

Solution

- Verify that your credentials are valid, your password has not expired, and your Active Directory account is not locked.
- If you have not specified a domain to use with Active Directory authentication, verify that you have an account on the default domain stored in the latest vRealize Log Insight configuration at `/storage/core/loginsight/config/loginsight-config.xml#[number]` where `[number]` is the largest.
- Find the latest configuration file: `/storage/core/loginsight/config/loginsight-config.xml#[number]` where `[number]` is the largest.
- Verify vRealize Log Insight has connectivity to the Active Directory server.
 - Navigate to **Configuration > Authentication**, fill in your user credentials, and click the **Test Connection** button.
 - Check the vRealize Log Insight `/var/log/vmware/loginsight/runtime.log` for messages related to DNS problems.
- Verify that the vRealize Log Insight and Active Directory clocks are in synch.
 - Check the vRealize Log Insight `/var/log/vmware/loginsight/runtime.log` for messages related to clock skew.
 - Use an NTP server to synchronize the vRealize Log Insight and Active Directory clocks.

SMTP does not work with STARTTLS option activated

When you configure the SMTP server with the STARTTLS option activated, test emails fail. Add your SSL certificate for the SMTP server to the Java truststore to resolve the problem.

Prerequisites

- Verify that you have the root user credentials to log in to the vRealize Log Insight virtual appliance.

- If you plan to connect to the vRealize Log Insight virtual appliance by using SSH, verify that TCP port 22 is open.

Procedure

- 1 Establish an SSH connection to the vRealize Log Insight vApp and log in as the root user.
- 2 Copy the SSL certificate for the SMTP server to the vRealize Log Insight vApp.
- 3 Run the following command.

```
`/usr/java/jre-vmware/bin/keytool -import -alias certificate_name -file  
path_to_certificate -keystore /usr/java/jre-vmware/lib/security/cacerts`
```

Note The outer quotes are inserted by using the back quote symbol that is on the same key as tilde on your keyboard. Do not use single quotes.

- 4 Enter the default the password **changeit**.
- 5 Run the `service loginsight restart` command.

What to do next

Navigate to **Configuration > SMTP** and use **Send Test Email** to test your settings. See [Configure the SMTP Server for vRealize Log Insight](#)

Upgrade Fails Because the Signature of the .pak file Cannot Be Validated

vRealize Log Insight upgrade fails because of a corrupted .pak file, expired license or insufficient disk space.

Problem

Upgrading vRealize Log Insight fails and you see an error message `Upgrade Failed. Failed to upgrade: Signature of the PAK file cannot be validated.`

Cause

The error might occur for the following reasons:

- The uploaded file is not a .pak file.
- The uploaded .pak file is not complete.
- The license of vRealize Log Insight has expired.
- The vRealize Log Insight virtual appliance root file system does not have enough disk space.

Solution

- ◆ Verify that you are uploading a .pak file.

- ◆ Verify the md5sum of the .pak file against the VMware download site.
- ◆ Verify that at least one valid license is configured on vRealize Log Insight.
- ◆ Log in to the vRealize Log Insight virtual appliance and run `df -h` to check the available disk space.

Note Do not put files on the vRealize Log Insight virtual appliance root file system.

Upgrade Fails with an Internal Server Error

vRealize Log Insight upgrade fails with an Internal Server Error because of a connection problem.

Problem

Upgrading vRealize Log Insight fails and you see an error message `Upgrade Failed. Internal Server Error`.

Cause

A connection problem occurred between the client and the server. For example, when you attempt to upgrade from a client that is on a WAN.

Solution

- ◆ Upgrade LI from a client on the same LAN as the server.

Missing `vmw_object_id` Field in the First Log Message After Integration with VMware Products

After integrating vRealize Log Insight with VMware products, the first log message does not contain the `vmw_object_id` field.

Problem

The first log message that you receive after you integrate vRealize Log Insight with vCenter Server and vRealize Operations does not contain the associated `vmw_object_id` field. The missing field can have an impact on the alert delivery mechanism when a vRealize Operations object is specified as an alert target.

Note Ensure that the vCenter Server is also integrated with vRealize Operations.

Solution

Wait for two minutes. The next log message that you receive will contain the `vmw_object_id` field.