

Upgrading vRealize Code Stream

vRealize Code Stream 2.2

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Updated Information

The following table lists the changes to *Upgrading vRealize Code Stream* for this product release.

Revision	Description
04 APR 2017	Revised Chapter 3, "Migrate Artifacts and Configure Your External Artifactory Instance," on page 13.
01 JAN 2017	Initial document release.

Upgrading vRealize Code Stream

The instructions in *Upgrading vRealize Code Stream* show you how to upgrade your instance of vRealize Automation to 7.2 so that you can then upgrade your instance of vRealize Code Stream to the current version.

Intended Audience

This information is intended for system administrators who are experienced and familiar with virtual machine technology and data center operations, and who install and upgrade instances of vRealize Code Stream.

VMware Technical Publications Glossary

VMware Technical Publications provides a glossary of terms that might be unfamiliar to you. For definitions of terms as they are used in VMware technical documentation, go to <http://www.vmware.com/support/pubs>.

Considerations for Upgrading vRealize Code Stream

1

To support an upgrade of your vRealize Code Stream instance, you must first upgrade your instance of vRealize Automation.

Supported upgrade paths for vRealize Automation include:

- vRealize Automation 7.1 to 7.2
- vRealize Automation 7.0.1 to 7.2

To upgrade earlier versions of vRealize Automation, such as 6.2.4 and 6.2.5, you must first upgrade these versions to 7.1. Then, you can upgrade to 7.2.

vRealize Code Stream and vRealize Automation are included in a single appliance. When you upgrade vRealize Automation to the current version, you also upgrade vRealize Code Stream.

For compatibility of supported upgrade paths between vRealize Automation and vRealize Code Stream, see the following table.

vRealize Automation	vRealize Code Stream
7.2	Current version
7.1	2.1
7.0.1	2.0
6.2.5	Current version
6.2.4	1.2
6.2.3	1.2
6.2.2	1.1
6.2.1	1.1
6.2.0	1.0

Reapply Licenses After Upgrade

After the upgrade, you must reenter your licenses in the vRealize Appliance. The upgrade removes existing licenses for vCloud Suite and vRealize Code Stream.

Upgrading vRealize Code Stream 1.0 and 1.1

If you are upgrading vRealize Code Stream 1.0 or 1.1, you can upgrade those instances to vRealize Code Stream 1.2 or 2.x. Then, upgrade to the current version.

Prerequisites for Upgrading the Appliance

2

Before you upgrade the appliance that includes vRealize Code Stream and vRealize Automation, review the prerequisites.

General Prerequisites

Before you begin the upgrade, verify that the following prerequisites are met.

- Before you upgrade, plan for downtime where no pipelines or workflows are running. If they are running when you upgrade, the upgrade might fail and pipelines will terminate abnormally.
- Before you upgrade, back up your artifacts. Then, you can migrate your artifacts. See [Chapter 3, “Migrate Artifacts and Configure Your External Artifactory Instance,”](#) on page 13.
- Verify that you have access to an Active Directory account with a `username@domain` format, and permissions to bind to the directory.

NOTE When you upgrade from vRealize Automation 6.2.x versions, Identity Provider from OpenLDAP is not migrated.

- Verify that you have access to an account in `SAMaccountName` format, and sufficient privileges to join the appliance to the domain by creating a new computer object dynamically. Or, verify that you have permissions to join this appliance to a pre-created computer object.
- Ensure that users cannot access the appliance while you perform the upgrade.
- Verify that you disabled any applications that query vRealize Automation.
- If your site uses an external vRealize Orchestrator appliance, and your deployment uses an external vRealize Orchestrator appliance that is connected to the Identity Appliance, you must upgrade vRealize Orchestrator before you upgrade vRealize Automation.

Migrate Artifacts and Configure Your External Artifactory Instance

3

Before you upgrade the vRealize Code Stream appliance, you must migrate your artifacts from the embedded Artifactory repository to an external Artifactory instance. To migrate your artifacts, you must understand the services used to migrate them, and perform several steps. You can then migrate your Artifactory endpoint, and upgrade the appliance.

jFrog Artifactory provides import and export services to migrate metadata and artifacts in two ways.

- System level migration. Export and import the entire Artifactory server, including configuration, security information, stored data, and metadata. The format used is identical to the system backup format.
- Repository level migration. Export and import data and metadata that is stored in a repository.

Prerequisites

- To import and export Artifactory data and settings to an external Artifactory server, review the instructions. See [Artifactory Import and Export](#).
- To export your artifacts and metadata, familiarize yourself with the folder structures used in the system level migration and the repository level migration.



CAUTION Before you migrate your artifacts, back them up. The upgrade, which you perform after you migrate your artifacts, removes all artifacts that existed in the embedded Artifactory before the upgrade.

Procedure

- 1 Log in to your virtual appliance as a normal user.
- 2 Delete the files named `/etc/opt/jfrog/artifactory/plugins/vcac-plugin.groovy`, `remote-list-browsing.groovy`, and `vcac-plugin.xml` from your embedded instance of Artifactory.
- 3 In the embedded Artifactory instance, select the approach to migrate your embedded Artifactory data to an external Artifactory instance, and review the folder structure.

Option	Description
Repository-level migration	Folders include <code>builds</code> , <code>etc</code> , <code>licenses</code> , and <code>repositories</code> . Files include the XML file named <code>artifactory.config</code> , a properties file named <code>artifactory.properties</code> , and the XML file named <code>security</code> .
System-level migration	Folders include <code>username</code> and <code>username.artifactory-metadata</code> .

- 4 If vRealize Code Stream cannot export the data because the target destination does not have the correct permissions, run the following steps.
 - a Establish an SSH connection to the virtual appliance as a root user.
For example: `ssh root@VRCS_APPLIANCE`
 - b Create a folder on the vRealize Code Stream appliance.
For example: `mkdir /var/temp/artifactory`
 - c Assign ownership to the user named artifactory on the target folder.
For example: `chown -r artifactory:artifactory /var/temp/artifactory`
 - d In the Artifactory Import & Export tool, click **Export**, and enter the name of the folder that you created.

After the export, you can use ftp, winscp, or another tool to move the exported files to another instance or to an external Artifactory server.

You have migrated your artifacts from the embedded Artifactory repository to an external Artifactory instance. For more information about the procedure to migrate your Artifactory data, see the jFrog documentation at <https://www.jfrog.com>.

What to do next

Prepare to upgrade your instance of vRealize Automation. See [Chapter 4, “Downloading vRealize Automation Appliance Updates,”](#) on page 15.

Downloading vRealize Automation Appliance Updates

4

You can check for updates on the management console for your appliance, and download the updates using one of the following methods.

For best upgrade performance, use the ISO file method.

- [Download vRealize Automation Appliance Updates](#) on page 15
You can download the update for your vRealize Appliance from a VMware public repository.
- [Download Virtual Appliance Updates for Use with a CD-ROM Drive](#) on page 16
You can update your virtual appliance from an ISO file that the appliance reads from a virtual CD-ROM drive.

Download vRealize Automation Appliance Updates

You can download the update for your vRealize Appliance from a VMware public repository.

Prerequisites

- Back up and save your environment.
- Ensure that your virtual appliance is powered on.
- Download the update from www.vmware.com.

Procedure

- 1 Go to the management console for your virtual appliance by using its fully qualified domain name, `https://va-hostname.domain.name:5480`.
- 2 Log in with the user name **root** and the password you specified when the appliance was deployed.
- 3 Click the **Update** tab.
- 4 Click **Settings**.
- 5 (Optional) In the Automatic Updates panel, set the frequency to check for updates.
- 6 In the Update Repository panel, select **Use Default Repository**.

NOTE If you download the updates for the virtual appliance from an internal repository, select **Use Specified Repository**. Then, enter the URL of the repository you created in the **Repository URL** text box.

For example, if the repository directory is `vcac_update_repo`, the URL would resemble:
`http://web_server_name.your_company.com/vcac_update_repo`

- 7 Click **Save Settings**.

Download Virtual Appliance Updates for Use with a CD-ROM Drive

You can update your virtual appliance from an ISO file that the appliance reads from a virtual CD-ROM drive.

Prerequisites

- Shut down the machines in the existing environment.
- Ensure that all CD-ROM drives used for the upgrade are enabled before you update the vRealize Appliance. See the vSphere documentation center for information about adding a CD-ROM drive to a virtual machine in the vSphere client.

Procedure

- 1 Download the update ISO file from www.vmware.com.
- 2 Locate the downloaded file on your machine, and verify that the file size is the same as the file on www.vmware.com.
- 3 Power on your virtual appliance.
- 4 Connect the CD-ROM drive for the virtual appliance you are updating to the ISO file you downloaded.
- 5 Go to the management console for your virtual appliance by using its fully qualified domain name, `https://va-hostname.domain.name:5480`.
- 6 Log in with the user name **root** and the password you specified when the appliance was deployed.
- 7 Click the **Update** tab.
- 8 Click **Settings**.
- 9 Under Update Repository, select **Use CDROM Updates**.
- 10 Click **Save Settings**.

Upgrading the vRealize Automation Appliance from 7.x to the Current Version

5

If you are using an earlier 7.x version of vRealize Automation, you must migrate your artifacts, then upgrade your vRealize Automation appliance to the currently supported version. Then, you can use the current version of vRealize Code Stream.

To upgrade your vRealize Automation appliance from an earlier 7.x version to the current version, see the supported and compatible versions of vRealize Automation and vRealize Code Stream at [Chapter 1, “Considerations for Upgrading vRealize Code Stream,”](#) on page 9.

Install the Update on the 7.x vRealize Automation Appliance

You must download and install updates for your vRealize Automation appliance.

Prerequisites

- Before you upgrade, perform the prerequisites and migrate your artifacts. See [Chapter 2, “Prerequisites for Upgrading the Appliance,”](#) on page 11.
- Select a download method, and download the update. See [Chapter 4, “Downloading vRealize Automation Appliance Updates,”](#) on page 15.
- Create a snapshot of your virtual machine.

Procedure

- 1 Open the vRealize Appliance management console for the upgrade.
 - a Go to the management console for your virtual appliance by using its fully qualified domain name, `https://va-hostname.domain.name:5480`.
 - b Log in with the user name **root** and the password you specified when the appliance was deployed.
 - c Click the **Update** tab.
- 2 Select **Update > Status**.
- 3 Click **Check Updates** to verify that an update is accessible.
- 4 (Optional) For instances of vRealize Appliance, click **Details** in the Appliance Version area to see information about the location of release notes.
- 5 Click the **Services** tab and verify that all services are listed as REGISTERED.

At least one vco service must be registered. If other vco services are registered, leave them as is.
- 6 Click **Update > Install Updates**.
- 7 Click **Settings**, and retain the default settings.
- 8 Select **Status > Check Updates > Install Updates**.

9 Click **OK**.

An informational message appears to indicate that the update is in progress.

10 After the update completes, reboot the machine.

Upgrading the vRealize Automation Appliance from 6.2.4 or 6.2.5 to the Current Version

6

You can upgrade your vRealize Automation appliance from 6.2.4 or 6.2.5 to the current version.

To prepare and upgrade your 6.2.4 or 6.2.5 instance of the vRealize Automation Appliance, you must perform the prerequisites and migrate your artifacts. See [Chapter 2, “Prerequisites for Upgrading the Appliance,”](#) on page 11.

Then, you must perform the steps in [“Checklist for Upgrading the 6.2.4 or 6.2.5 vRealize Automation Appliance Components,”](#) on page 19. Then, you can update your vRealize Automation appliance to the current version.

This chapter includes the following topics:

- [“Preparing to Upgrade the vRealize Automation Appliance,”](#) on page 19
- [“Checklist for Upgrading the 6.2.4 or 6.2.5 vRealize Automation Appliance Components,”](#) on page 19
- [“Backing up and Saving Your Existing Environment,”](#) on page 20
- [“Installing Updates on the 6.2.4 or 6.2.5 vRealize Automation Appliance,”](#) on page 22

Preparing to Upgrade the vRealize Automation Appliance

You must perform several tasks to prepare to upgrade your vRealize Automation appliance.

You must perform the required tasks in the order that they appear in the checklist. See [“Checklist for Upgrading the 6.2.4 or 6.2.5 vRealize Automation Appliance Components,”](#) on page 19.

Checklist for Upgrading the 6.2.4 or 6.2.5 vRealize Automation Appliance Components

When you upgrade a 6.2.4 or 6.2.5 vRealize Automation appliance to the current release, you must update the vRealize Automation appliance components in a specific order.

Before you upgrade, make sure that you perform the prerequisites and migrate your artifacts. See [Chapter 2, “Prerequisites for Upgrading the Appliance,”](#) on page 11.

Use the tasks in the checklist to track your work as you perform the upgrade tasks in order.



CAUTION You must use the order prescribed to upgrade the components, and you must upgrade all components. Following a different order results in unexpected behavior or a failed upgrade.

For information about supported upgrade paths, see the vRealize Automation release notes on the [VMware vRealize Automation Documentation landing page](#).

Table 6-1. Checklist to Upgrade a Minimal vRealize Automation Appliance Deployment

Task	Instructions
<input type="checkbox"/> IMPORTANT: Back up your current installation. This step is critical to ensure that no loss of data occurs.	For details on how to back up and restore your system, see “Backing up and Saving Your Existing Environment,” on page 20. For general information, see <i>Configuring Backup and Restore by Using Symantec Netbackup</i> at http://www.vmware.com/pdf/vrealize-backup-and-restore-netbackup.pdf
<input type="checkbox"/> Configure your hardware resources.	See “Increase vRealize Automation Appliance Hardware Resources for Upgrade,” on page 20.
<input type="checkbox"/> Download updates to the vRealize Automation appliance.	See Chapter 4, “Downloading vRealize Automation Appliance Updates,” on page 15.
<input type="checkbox"/> Install the update on the vRealize Automation appliance.	See “Install the Update on the 6.2.4 or 6.2.5 vRealize Automation Appliance,” on page 22.
<input type="checkbox"/> Update the Single-Sign On utility to the VMware Identity Manager utility.	See “Update Your Single Sign-On Password for VMware Identity Manager,” on page 23.
<input type="checkbox"/> Update the license key.	See “Update the License Key,” on page 24.
<input type="checkbox"/> Migrate the Identity Store to the VMware Identity Manager	See “Migrate Identity Stores to the VMware Identity Manager,” on page 24

Backing up and Saving Your Existing Environment

Before you begin the upgrade, you must complete the prerequisites to back up and save your existing environment.

Prerequisites

- Verify that your source installation is fully installed and configured.
- Back up the vRealize Appliance configuration files in the following directories, for each instance of the appliance.
 - `/etc/vcac/`
 - `/etc/vco/`
 - `/etc/apache2/`
 - `/etc/rabbitmq/`
- Back up all databases.
- Create a snapshot of your tenant configuration and the users assigned.
- Back up all files that you have customized on Windows or Linux/UNIX. For example, on Windows, back up: `C:\Program Files (x86)\VMware\VCAC\Server\Website\XmlData\DataCenterLocations.xml`
- Create a snapshot of your virtual appliance, and adhere to regular guidelines for backing up the entire system in case the vRealize Automation upgrade fails. See *Configuring vRealize Suite 6.0 for Backup and Restore* topics in vRealize Suite documentation.

Increase vRealize Automation Appliance Hardware Resources for Upgrade

Before you upgrade, you must increase hardware resources for each vRealize Automation appliance.

The following procedure is based on the Windows client.

Prerequisites

- Ensure that you have at least 60 GB of free space on your appliance.
- For the snapshot that you took of your vRealize Appliance instance, you must clone the appliance before you increase the hardware resources on the clone.
- After you clone the appliance, power off the original appliance before you perform this procedure.

Procedure

- 1 Log in to your vCenter Server instance.
- 2 Select the vRealize Appliance and click **Edit Settings**.
- 3 Select **Memory** and set the value to **18 GB**.
- 4 Select **CPU** and set the Number of virtual sockets value to **4**.
- 5 If there is an existing virtual Disk 4 from a previous vRealize Automation 6.2.x release, delete it and add a new virtual disk.
 - a Delete Disk 4 on the cloned virtual machine, and create Disk 4 with a disk size of 50 GB.
 - b If you have two disks, add Disk 3 with a disk size of 25 GB. Then, add Disk 4 with a disk size of 50 GB.
- 6 Extend the size of Disk 1 GB to 50 GB.
 - a Select Disk 1.
 - b Change the size to 50 GB, and click **OK**.
- 7 To add a virtual disk, click **Add** above the Resources table.
- 8 For the Device Type, select **Hard Disk**, and click **Next**.
- 9 Select **Create a new virtual disk**.
- 10 Select **Thin Provision**, and click **Next**.
- 11 Set the disk size value to **50 GB**.
- 12 Select **Store with the virtual machine**, and click **Next**.
- 13 Verify that the **Independent** option is deselected for **Mode** and **SCSI (0:3)** is selected for **Virtual Device Mode**, and click **Next**.
If you are prompted to accept the recommended settings, accept them.
- 14 Click **Finish**.
- 15 Click **OK**.
- 16 Create a snapshot of the virtual machine.

Power On the System Components

After you increase the hardware resources, you must power on the system before you upgrade the vRealize Appliance.

Prerequisites

Understand the order to power up the components in the system. See the vRealize Automation 6.2 topic titled Start Up vRealize Automation, at

<http://pubs.vmware.com/vra-62/topic/com.vmware.vra.system.administration.doc/GUID-4A4BD979-61EF-4590-AEDF-6A9BA42426B6.html>.

Procedure

- 1 Power on all components in the system in the correct order.
- 2 Verify that the system is completely functional.

Installing Updates on the 6.2.4 or 6.2.5 vRealize Automation Appliance

To update the vRealize Appliance after upgrade, you install the updates on the appliance, update your single sign-on password, update the license key, and migrate identity stores.

After you install the updates, you reconfigure settings for the first vRealize Appliance node.

After you update the first appliance node, you upgrade vRealize Orchestrator. Then, you upgrade the secondary vRealize Appliance nodes.

Install the Update on the 6.2.4 or 6.2.5 vRealize Automation Appliance

You must install the update on the 6.2.4 or 6.2.5 vRealize Appliance to upgrade the appliance to the current version.

Prerequisites

- Select a download method and download the update. See [Chapter 4, “Downloading vRealize Automation Appliance Updates,”](#) on page 15.
- If you have a component in the Common Components Catalog installed, the VMware Professional Services Organization (PSO) must uninstall the component before you update the appliance, and reinstall the component with the appropriate version after the upgrade completes. Contact your PSO representative for assistance.
- Verify that all saved and in-progress requests completed successfully.
- Verify that the Message Signature Check value is disabled. See the vRealize Automation Information Center.

Procedure

- 1 Open the vRealize Appliance management console.
 - a Go to the management console for your virtual appliance by using its fully qualified domain name, `https://va-hostname.domain.name:5480`.
 - b Log in with the user name **root** and the password you specified when the appliance was deployed.
 - c Click the **Update** tab.
- 2 Click the **Services** tab, and verify that all services except for `iaas-service` are listed as REGISTERED. At least one `vco` service must be registered. If other `vco` services are registered, leave them as is.
- 3 Select **Update > Status**.
- 4 Click **Check Updates** to verify that an update is accessible.
- 5 (Optional) For instances of vRealize Appliance, click **Details** in the Appliance Version area to see information about the location of release notes.
- 6 Click **Install Updates**.
- 7 Click **OK**.

An informational message appears to indicate that the update is in progress.

- 8 (Optional) If you did not manually resize Disk 1 to 50 GB, perform the following steps.
 - a When the system prompts you to reboot the virtual appliance, click the **System** tab and click **Reboot**.
During the reboot, the system adjusts the space required for the update.
 - b After the system restarts, log in to the vRealize Appliance management console again, and select **Update > Status**.
 - c Click **Check Updates** and click **Install Updates**.

- 9 To view the progress of the update, open the following log files.

- /opt/vmware/var/log/vami/updatecli.log
- /opt/vmware/var/log/vami/vami.log
- /var/log/vmware/horizon/horizon.log
- /var/log/bootstrap/*.log

If you log out during the upgrade process, and log in again before the upgrade is finished, you can continue to follow the progress of the update in the log file. The file named `updatecli.log` might display information about the vRealize Automation version from which you are upgrading. This version changes to the proper version later during the upgrade.

The time required for the update to finish varies according to your environment.

- 10 Read the note about participating in the Customer Experience Improvement Program and select to join or not join the program.

For information about the program, click the **Telemetry** tab in the product management console.

Update Your Single Sign-On Password for VMware Identity Manager

After you install the updates, you must update your Single Sign-On (SSO) password for VMware Identity Manager.

VMware Identity Manager replaces the Identity Appliance and vSphere SSO components.

Procedure

- 1 Log out of the vRealize Appliance management console, and close your browser.
- 2 Open the browser again, and log back in.
- 3 Select **vRA Settings > SSO**.
- 4 Using a complex password, enter a new VMware Identity Manager password and click **Save Settings**.

Do not use simple passwords. You can safely ignore the following error message: `SSO server is not connected`. It can require several minutes to restart the services.

The vRealize Appliance management console accepts the password.

- 5 Reboot the virtual appliance.
 - a Click the **System** tab.
 - b Click **Reboot** and confirm your selection.

- 6 Verify that all services are running.
 - a Log in to the vRealize Appliance management console.
 - b Click the **Services** tab on the console.
 - c Click the **Refresh** tab to monitor the progress of service startup.

You should see a minimum of 35 services.
- 7 Verify that all services are registered except iaas-service.

The release-management service does not start without a vRealize Code Stream license key.
- 8 Reboot the virtual appliance.
 - a Click the **System** tab.
 - b Click **Reboot** and confirm your selection.

What to do next

[“Update the License Key,”](#) on page 24.

Update the License Key

You must upgrade your license key to use the latest version of the vRealize Appliance.

Procedure

- 1 Open a Web browser to the vRealize Appliance management interface URL.
- 2 Select **vRA Settings > Licensing**.

If the text box named **New License Key** is not available, perform the following steps, then select **vRA Settings > Licensing** again.

 - a Log out of the management console.
 - b Clear your browser cache.
 - c Log in to the management console again.
- 3 Enter your new license key in the **New License Key** text box.

Endpoints and quotas are flagged according to your end-user license agreement (EULA).
- 4 Select the **Services** tab, and verify that the services named `artifact-management` and `release-management` are registered.

What to do next

[“Migrate Identity Stores to the VMware Identity Manager,”](#) on page 24

Migrate Identity Stores to the VMware Identity Manager

When you upgrade from 6.2.4 or 6.2.5 to the current version of vRealize Automation, you must migrate the identity stores.

As required in the following procedures, refer to the snapshot of your 6.2.4 or 6.2.5 tenant configuration information.

NOTE After you migrate the identity stores, users of vRealize Code Stream must manually reassign vRealize Code Stream roles.

Procedure

- 1 [Create a Local User Account for Your Tenants](#) on page 25
When you migrate identity stores, you must set up a tenant with a local user account, and assign tenant administrator privileges to the local user account.
- 2 [Synchronize Users and Groups for an Active Directory Link](#) on page 25
To import your users and groups into vRealize Automation using the Directories Management capability, you must connect to your Active Directory link.
- 3 [Delete and Restore Tenant Administrators from the vRealize Automation Source 6.2.x Environment](#) on page 27
You must delete and restore the vRealize Automation 6.2.x tenant administrators in each tenant after migration.

Create a Local User Account for Your Tenants

When you migrate identity stores, you must set up a tenant with a local user account, and assign tenant administrator privileges to the local user account.

Prerequisites

Verify that you set a new VMware Identity Manager password. See [“Update Your Single Sign-On Password for VMware Identity Manager,”](#) on page 23.

Procedure

- 1 Log in to the vRealize Automation console as the default system administrator username **administrator**, and enter the password.
The console location is <https://vra-appliance/vcac/>.
- 2 Click your tenant.
For example, for the default tenant, click **vsphere.local**.
- 3 Select the **Local Users** tab, and click **New**.
- 4 Create a local user account to assign to the tenant administrator role, and click **OK**.
The local user name must be unique to the vsphere.local active directory.
- 5 Click the **Administrators** tab.
- 6 In the **Tenant administrators** search box, enter the local user name and click **Enter**.
- 7 Click **Finish**.
- 8 Repeat these steps for each of your tenants.
- 9 Log out of the console.

What to do next

[GUID-0E664746-8A07-4CA7-81F3-9EF0265E0138#GUID-0E664746-8A07-4CA7-81F3-9EF0265E0138](#)

Synchronize Users and Groups for an Active Directory Link

To import your users and groups into vRealize Automation using the Directories Management capability, you must connect to your Active Directory link.

Perform this procedure for each of your tenants.

Prerequisites

Verify that you have access privileges to the Active Directory.

Procedure

- 1 Log in to the vRealize Automation console at: https://vra-appliance/vcac/org/tenant_name.
- 2 Select **Administration > Directories Management > Directories**.
- 3 Click **Add Directory** and select **Add Active Directory over LDAP/IWA**.
- 4 Enter your Active Directory account settings.

◆ Non-Native Active Directories

Option	Sample Input
Directory Name	Enter a unique directory name. Select Active Directory over LDAP when using non-Native Active Directory.
This Directory Supports DNS Services	Deselect this option.
Base DN	Enter the Distinguished Name (DN) of the starting point for directory server searches. For example, cn=users,dc=rainpole,dc=local .
Bind DN	Enter the full distinguished name (DN), including common name (CN), of an Active Directory user account that has privileges to search for users. For example, cn=config_admin infra,cn=users,dc=rainpole,dc=local .
Bind DN Password	Enter the Active Directory password for the account that can search for users.

◆ Native Active Directories

Option	Sample Input
Directory Name	Enter a unique directory name. Select Active Directory (Integrated Windows Authentication) when using Native Active Directory.
Domain Name	Enter the name of the domain to join.
Domain Admin Username	Enter the user name for the domain admin.
Domain Admin Password	Enter the password for the domain admin account.
Bind User UPN	Use the email address format to enter the name of the user who can authenticate the domain.
Bind DN Password	Enter the Active Directory bind account password for the account that can search for users.

- 5 Click **Test Connection** to test the connection to the configured directory.
- 6 Click **Save & Next**.
The Select the Domains page appears, and displays the list of domains.
- 7 Accept the default domain setting and click **Next**.
- 8 Verify that the attribute names are mapped to the correct Active Directory attributes, and click **Next**.
- 9 Select the groups and users to synchronize.
 - a Click the **New** icon.
 - b Enter the user domain and click **Find Groups**.
For example, enter **dc=vcac,dc=local**.
 - c To select the groups to synchronize, click **Select** and click **Next**.
 - d On the Select Users page, select the users to synchronize and click **Next**.

- 10 Review the users and groups are syncing to the directory, and click **Sync Directory**.

The directory synchronization takes some time and runs in the background.

Delete and Restore Tenant Administrators from the vRealize Automation Source 6.2.x Environment

You must delete and restore the vRealize Automation 6.2.x tenant administrators in each tenant after migration.

Perform the following procedure for each tenant in the target vRealize Automation console.

NOTE If you migrate from a vRealize Automation 7.x environment, you do not need to perform this procedure.

Prerequisites

- Successful migration to vRealize Automation 7.3.
- Log in to the target vRealize Automation console.
 - a Open the vRealize Automation console on the upgraded virtual appliance using its fully qualified domain name, `https://va-hostname.domain.name/vcac`.
 - b Select the **vsphere.local** domain.
 - c Log in with the user name **administrator** and the password that you entered when you deployed the virtual appliance.

Procedure

- 1 Select **Administration > Tenants**.
- 2 Click a tenant name.
- 3 Click **Administrators**.
- 4 Make a list of each tenant administrator name and user name.
- 5 Point to each administrator and click the Delete icon until you delete all administrators.
- 6 Click **Finish**.
- 7 On the Tenants page, click the tenant name again.
- 8 Click **Administrators**.
- 9 In the appropriate search box, enter the name of each user that you deleted, and click **Enter**.
- 10 To add the user back as an administrator, when the search returns the list of users, click the name of the appropriate user.

When you finish, the list of tenant administrators must resemble the same as the list of administrators you deleted.
- 11 Click **Finish**.

vRealize Code Stream Post Upgrade

During an upgrade from vRealize Code Stream 1.0 to vRealize Code Stream 1.2, 2.1, or the current version, existing endpoints are added to the appliance, and the format of the release pipeline variables is updated.

Artifactory Endpoints and Pipeline

After the upgrade, you must add external Artifactory details to the new default endpoint that you created. See [Chapter 3, “Migrate Artifacts and Configure Your External Artifactory Instance,”](#) on page 13.

Before the upgrade, if you had pipelines that included an Artifactory task, those pipelines go into Draft state after the upgrade. As a result, you must activate and run those pipelines.

Jenkins Server and vRealize Automation Server Endpoints

vRealize Code Stream retrieves all the existing endpoints for Jenkins Server, vRealize Automation Server, and Team Foundation Server (TFS) from vRealize Orchestrator, and adds them as new entries. The endpoints appear in vRealize Automation at **Administration > vRealize Orchestrator Configuration > Endpoints**.

The names of the server endpoints are updated as follows:

- Jenkins server endpoint name is prefixed with `Jenkins_EndpointName`.
- vRealize Automation server endpoint name is prefixed with `Vra_EndpointName`.

Release Pipeline Variables

In the current version, the property name format has changed.

During the upgrade to the current version, the format of the existing release pipeline properties are updated. For example, `$RP1` is updated to `${pipeline.RP1}`, and `$RP2` is updated to `${pipeline.RP2}`.

Task Output Variables

During the upgrade, the format of the existing task output variable values such as `$CustomScriptName_OUTPUT` are updated to `${StageName.TaskName.outputConfig}` in the release pipeline.

Variable Names

During the upgrade, the format of variable names for manual approval in custom tasks are updated.

Table 7-1. Variable Name Values

Pre-upgrade Format	Post-upgrade Format
<i>\$ReleasePipelineName</i>	<i>\${releasePipelineName}</i>
<i>\$StageName</i>	<i>\${stageName}</i>
<i>\$NextStageName</i>	<i>\${nextStageName}</i>
<i>\$TaskName</i>	<i>\${taskName}</i>
<i>\$NextTaskName</i>	<i>\${nextTaskName}</i>

Variable Concatenation

During the upgrade, the format of variable values that are concatenated such as `$RP1` with output `$CustomScriptName_OUTPUT`, are updated to `${pipeline.RP1}` with output `${StageName.TaskName.outputConfig}`.

Troubleshooting the Upgrade

The upgrade troubleshooting topics provide solutions to problems that you might encounter when upgrading vRealize Automation.

This chapter includes the following topics:

- [“Retrieve Logs to Troubleshoot the vRealize Code Stream Upgrade,”](#) on page 31
- [“Migration of Identity Store Fails Because the Active Directory is not Synchronized,”](#) on page 31
- [“Migration of Identity Store Fails Because of Incorrect Credentials,”](#) on page 32
- [“Log In Fails After Upgrade,”](#) on page 33
- [“Upgrade Is Unsuccessful if Root Partition Does Not Provide Sufficient Free Space,”](#) on page 33

Retrieve Logs to Troubleshoot the vRealize Code Stream Upgrade

You can retrieve the logs from the `catalina.out` log file in the vRealize Automation appliance to troubleshoot the vRealize Code Stream upgrade.

Prerequisites

Verify that you have credentials for logging in to the Linux-based virtual machine with root privileges.

Procedure

- 1 Log in to the virtual machine.
- 2 Navigate to the `/var/lib/vcac/server/logs` directory.
- 3 Retrieve upgrade logs from the `catalina.out` log file.

```
grep -3n "vRCS Upgrade" catalina.out
```
- 4 Identify upgrade logs that have a `vRCS Upgrade ->` prefix.

The release pipelines that failed to migrate have an error description next to the pipeline name.

Migration of Identity Store Fails Because the Active Directory is not Synchronized

The migration of identity store fails because a thousand plus groups in the Active Directory have not been synchronized to the VMware Identity Manager utility directory.

Problem

The migration of identity store to the VMware Identity Manager utility fails.

Cause

The problem occurs because more than thousand groups in the group base search domain name that have not been synchronized to the VMware Identity Manager utility directory.

Solution

- 1 Log in the vRealize Appliance as a system administrator.
- 2 Create a local user for the default tenant.
- 3 Assign the local user the Tenant Administrator privileges.
- 4 Log out of the vRealize Appliance.
- 5 Log in the tenant with the local user credentials.
- 6 Select **Administration > Directories Management > Directories**.
- 7 Open the failed Active Directory domain.
- 8 Click **Sync Settings** to open a dialog with synchronization options.
- 9 Click the + icon to add a new line for group DN definitions and enter the appropriate group DN that need to be synchronized.
- 10 Click **Save & Sync** to save your changes and synchronize to implement your updates immediately.

The VMware Identity Manager utility directory is synchronized to the thousand plus groups in the Active Directory.

What to do next

Start the migration process.

Migration of Identity Store Fails Because of Incorrect Credentials

The migration of identity store fails because of incorrect Active Directory domain credentials or lack of user permission.

Problem

The migration of identity store to the VMware Identity Manager utility fails.

Cause

The credentials of the Active Directory domain are incorrect. The problem also occurs when the user does not have the permission to join the VMware Identity Manager utility to the Active Directory Domain.

Solution

- 1 Log in the vRealize Appliance as a system administrator.
- 2 Create a local user for the vsphere.local tenant.
- 3 Assign the local user the Tenant Administrator privileges.
- 4 Log out of the vRealize Appliance.
- 5 Log in the tenant with the local user credentials.
- 6 Select **Administration > Directories Management > Connectors**.
- 7 Click **Join Domain** to join the connector to a specific Active Directory domain.

The connector syncs user and group data between Active Directory and the Directories Management service

- 8 Enter the domain, domain username, and password for the active directory domain.

- 9 Click **Save**.

The Join Domain page is refreshed and displays a message that you are currently joined to the domain.

What to do next

Start the migration process.

Log In Fails After Upgrade

You must exit the browser and log in again after an upgrade for sessions that use unsynchronized user accounts.

Problem

After you upgrade vRealize Automation, the system denies access to unsynchronized user accounts at login.

Solution

Exit the browser and relaunch vRealize Automation.

Upgrade Is Unsuccessful if Root Partition Does Not Provide Sufficient Free Space

If sufficient free space is unavailable on the root partition of the vRealize Automation appliance host, upgrade cannot proceed.

Solution

This procedure increases the free space on the Disk 1 root partition of the vRealize Automation appliance host. In a distributed deployment, perform this procedure to increase the free space on each replica node sequentially, and then increase the free space on the master node.

NOTE When you perform this procedure, you might see these warning messages:

- **WARNING: Re-reading the partition table failed with error 16:**
Device or resource busy. The kernel still uses the old table. The new table will be used at the next reboot or after you run `partprobe(8)` or `kpartx(8)` Syncing disks.
- **Error: Partition(s) 1 on /dev/sda have been written, but we have been unable to inform the kernel of the change, probably because it/they are in use. As a result, the old partition(s) will remain in use. You should reboot now before making further changes.**

Ignore the message `You should reboot now before making further changes`. If you reboot your system before step 10, you corrupt the upgrade process.

Procedure

- 1 Power on the VMware vRealize™ Automation appliance host virtual machine and log in as with a secure shell connection as the root user.
- 2 Run the following commands to stop services.
 - a `service vcac-server stop`
 - b `service vco-server stop`
 - c `service vpostgres stop`
- 3 Run the following command to unmount the swap partition.


```
swapoff -a
```

- 4 Run the following command to delete the existing Disk 1 partitions and create a 44-GB root partition and a 6-GB swap partition.

```
(echo d; echo 2; echo d; echo 1; echo n; echo p; echo ; echo ; echo '+44G'; echo n; echo p; echo ; echo ; echo ; echo w; echo p; echo q) | fdisk /dev/sda
```

- 5 Run the following command to change the swap partition type.

```
(echo t; echo 2; echo 82; echo w; echo p; echo q) | fdisk /dev/sda
```

- 6 Run the following command to set the Disk 1 bootable flag.

```
(echo a; echo 1; echo w; echo p; echo q) | fdisk /dev/sda
```

- 7 Run the following command to register the partition changes with the Linux kernel.

```
partprobe
```

If you see a message prompting you to reboot before you make further changes, ignore the message. Rebooting the system before step 10 corrupts the upgrade process.

- 8 Run the following command to format the new swap partition.

```
mkswap /dev/sda2
```

- 9 Run the following command to mount the swap partition.

```
swapon -a
```

- 10 Reboot the vRealize Automation appliance.

- 11 After the appliance reboots, run the following command to resize the Disk 1 partition table.

```
resize2fs /dev/sda1
```

- 12 To verify that the disk expansion is successful, run `df -h` and check that the available disk space on `/dev/sda1` is greater than 30 GB.

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