Upgrading vRealize Automation 7.0.1 for vRealize Code Stream 2.0

vRealize Code Stream 2.0

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Upgrading vRealize Automation 7.0.1 for vRealize Code Stream

Upgrading vRealize Automation 7.0.1 for vRealize Code Stream tells you how to download and install updates to upgrade vCloud Automation Center 6.1.x to vRealize Automation 7.0.1 so that you can upgrade your appliance to vRealize Code Stream 2.0.

For information on how to upgrade vRealize Automation 7.0 to 7.0.1, see http://pubs.vmware.com/vra-70/topic/com.vmware.ICbase/PDF/vrealize-automation-701-upgrading.pdf.

Note   Not all features and capabilities of vRealize Automation are available in all editions. For a comparison of feature sets in each edition, see https://www.vmware.com/products/vrealize-automation/.

Intended Audience

This information is intended for experienced Windows or Linux system administrators who are familiar with virtual machine technology and datacenter operations.

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 About Upgrading vRealize Code Stream

1

vRealize Code Stream1.0 and 1.1 can be directly upgraded to vRealize Code Stream 1.2 or 2.0.

Following vRealize Automation upgrade paths are supported for vRealize Code Stream:

vRealize Automation	vRealize Code Stream
6.2.0	1.0
6.2.1	1.1
6.2.2	1.1
6.2.3	1.2
7.0	No bits available
7.0.1	2.0

Upgrading to vRealize Automation 6.2 or Later

2

Upgrading is a multistage process in which procedures must be performed in a particular order. Follow the suggested processes to ensure a smooth upgrade with a minimum of system downtime. You must upgrade all product components to the same version.

Note   Beginning in 6.2, vCloud Automation Center is rebranded to vRealize Automation. Only the user interface and service names are changed. Directory names and program names that contain vcac are not affected.

Locate your currently installed version in the table and then follow the steps in the documents on the right to incrementally upgrade your vRealize Automation environment to the latest release. You can find links to the documentation for all versions of vCloud Automation Center and vRealize Automation at https://www.vmware.com/support/pubs/vcac-pubs.html.

Table 2-1. Supported Upgrade Paths

Your Currently Installed Version	Documentation for Incremental Upgrades
vCloud Automation Center 6.0	Perform upgrades in the following order: ■ *Upgrading vCloud Automation Center 6.0 to 6.0.1* ■ *Upgrading to vCloud Automation Center 6.1* ■ *Upgrading to vRealize Automation 6.2.x*
vCloud Automation Center 6.0.1	Perform upgrades in the following order: ■ *Upgrading to vCloud Automation Center 6.1* ■ *Upgrading to vRealize Automation 6.2.x*
vCloud Automation Center 6.1.x	*Upgrading to vRealize Automation 6.2.x*
vRealize Automation 6.2.x	Upgrade directly to the latest 6.2.x release as described in *Upgrading to vRealize Automation 6.2.x*

This chapter includes the following topics:

■ Checklist for Upgrading vRealize Automation Components

■ Considerations About Upgrading to This vRealize Automation Version

■ Prerequisites for Upgrading vRealize Automation

Checklist for Upgrading vRealize Automation Components

When you perform an upgrade, you update all vRealize Automation components is this order: virtual appliances, IaaS databases, and IaaS services.

The Upgrade to vRealize Automation Checklist table provides a high-level overview of upgrade tasks.

Print out a copy of this checklist and use it to track your work as you complete the upgrade. Complete the tasks in the order in which they are given.

You must upgrade components in the prescribed order and upgrade all components. Using a different order can result in unexpected behavior after the upgrade or failure of the upgrade to complete.

For information on all supported upgrade paths, see the release notes for vRealize Automation, available at the VMware vRealize Automation Documentation landing page.

Table 2-2. **Upgrade to vRealize Automation Checklist**

Task	Instructions	Notes
❏ Complete and verify all prerequisites for the upgrade.	See Prerequisites for Upgrading vRealize Automation.	
❏ If you are upgrading a distributed deployment that uses a load balancer, shut down the vco-service on each vRealize Appliance.	See GUID-1317C4F0-94AD-47A5-AC2F-AF25DF4C20A6#GUID-1317C4F0-94AD-47A5-AC2F-AF25DF4C20A6.	
❏ Shut down services on your IaaS Windows Servers.	See Shut Down vCloud Automation Center Services on Your IaaS Windows Server.	
❏ Check for updates to the Identity Appliance.	See Downloading Virtual Appliance Updates.	
❏ Install the 6.2 update on the Identity Appliance.	See GUID-37795576-B015-4272-8C97-1866B1B47270#GUID-37795576-B015-4272-8C97-1866B1B47270.	If you plan to use vSphere PSC as your SSO appliance, see GUID-7F8DC8B7-2B3E-4461-982B-4DB13BF1FF0E#GUID-7F8DC8B7-2B3E-4461-982B-4DB13BF1FF0E.
❏ Check for updates to the vRealize Appliance.	See Downloading Virtual Appliance Updates.	
❏ Install the 6.2 update on each vRealize Appliance in your installation.	See Install the Update on the vRealize Automation Appliance.	
❏ Update the IaaS database.	See GUID-12DC45F9-E003-45C1-8826-D1636790F20D#GUID-12DC45F9-E003-45C1-8826-D1636790F20D.	

Table 2-2. Upgrade to vRealize Automation Checklist (Continued)

Task	Instructions	Notes
❑ Download and install updates for IaaS.	See Chapter 5 Upgrading the IaaS Server.	
❑ (Optional) Apply vRealize Automation branding to 6.2	See GUID-5008CC6D-993E-400E-97B2-5950BA3B030B#GUID-5008CC6D-993E-400E-97B2-5950BA3B030B.	

Considerations About Upgrading to This vRealize Automation Version

vRealize Automation 7 introduces various functional changes during and after the upgrade process that you must consider before you upgrade your vRealize Automation deployment.

Note New vRealize Automation 7.0 features and innovations required several platform-level enhancements. As a result, certain upgrade scenarios will require additional assistance. To ensure the best possible upgrade experience, it is recommended that you visit the vRealize Automation Upgrade Assistance webpage at http://www.vmware.com/products/vrealize-automation/upgrade-center before you begin the upgrade process.

Review the considerations in the subtopics before you upgrade.

Upgrade and Identity Appliance Specifications

You configure identity appliance upgrade information in response to prompts that are generated by the vRealize Automation upgrade executable.

The target deployment uses the VMware Identity Manager.

Upgrade and Licensing

During the upgrade, your existing vRealize Automation 6.x licenses, and any vCloud Suite 6.x licenses that you have, are removed. You must reenter your licenses in the vRealize Automation 7 vRealize Appliance.

Understanding How Roles Are Upgraded

When you upgrade vRealize Automation, your organization's existing role assignments are maintained. The upgrade also creates some role assignments to support additional blueprint architect roles.

The following architect roles are used to support the blueprint definition in the design canvas:

- Application architect. Assembles existing components and blueprints to create composite blueprints.

- Infrastructure architect. Creates and manages machine blueprints.

- Advanced Service Designer architect. Creates and manages Advanced Service Designer blueprints.

■ Software architect. Creates and manages Application Services components.

In vRealize Automation 7, tenant administrators and business group managers cannot design blueprints by default. Upgraded tenant administrators and business group managers are given the infrastructure architect role.

All users with the ability to reconfigure a machine in the vRealize Automation 6.2 source version are authorized to change machine ownership after upgrading to this vRealize Automation version.

The following role assignments are made during the upgrade. Roles that are not listed in the table are upgraded to the same role name in the target deployment.

Table 2‑3. Roles Assigned During Upgrade

Role in Source Deployment	Role in Target Deployment
Tenant administrator	Tenant administrator and Infrastructure architect
Business group manager	Business group manager and Infrastructure architect
Service architect	XaaS architect
Application architect	Software architect

Understanding How Blueprints Are Upgraded

As a rule, published blueprints are upgraded as published blueprints.

However, there are exceptions to that rule. For example, vApp and vApp component blueprints are not upgraded, as vApps are not supported in the target vRealize Automation deployment. Multi-machine blueprints are upgraded as composite blueprints that contain blueprint components. Multi-machine blueprints that contain unsupported settings are upgraded as unpublished.

For related information see Upgrade and vApp Blueprints, vCloud Endpoints, and vCloud Reservations and Understanding How Multi-Machine Blueprints Are Upgraded.

Upgrade and vApp Blueprints, vCloud Endpoints, and vCloud Reservations

You cannot upgrade a deployment that contains vApp (vCloud) endpoints. The presence of endpoints of type vApp (vCloud) prevent upgrade to vRealize Automation 7.0.

When upgrade encounters a vApp (vCloud) endpoint in the source deployment, upgrade fails on the master virtual appliance and reports a message in the user interface and log. You can determine if your source deployment contains vApp (vCloud) endpoint by logging in to vRealize Automation with Iaas Administrator privileges, selecting **Infrastructure > Endpoints** and noting the platform type value in the Endpoints list. If the list contains endpoints of platform type vApp (vCloud), upgrade to 7.0 is not supported.

Managed vApps for vCloud Air or vCloud Director resources are not supported in the target vRealize Automation deployment.

Note   A known issue exists where the following deprecated approval policy types appear in the list of available approval policy types after upgrade is finished. These policy types are unusable.

- Service Catalog - Catalog Item Request - vApp

- Service Catalog - Catalog Item Request - vApp Component

You can create vCloud Air and vCloud Director endpoints and reservations in the target deployment. You can also create blueprints that contain vCloud Air or vCloud Director machine components.

Understanding How Multi-Machine Blueprints Are Upgraded

You can upgrade managed service, multi-machine blueprints from a supported vRealize Automation 6.2.x version deployment.

When you upgrade a multi-machine blueprint, component blueprints are upgraded as separate single-machine blueprints. The multi-machine blueprint is upgraded as a composite blueprint in which its previous children blueprints are nested as separate blueprint components.

The upgrade creates a single composite blueprint in the target deployment that contains one machine component for each component blueprint in the source multi-machine blueprint. If the multi-machine blueprint contains a setting that is not supported in the target vRealize Automation deployment, the blueprint is upgraded but its status is changed to draft in the target deployment. For example, if the multi-machine blueprint contains a private network profile, the private network profile setting is ignored during upgrade and the blueprint is upgraded in a draft state. You can edit the draft blueprint to specify different network profile information and publish it.

Note   If a published blueprint in the source deployment is upgraded to a draft status blueprint, the blueprint is no longer part of a service or entitlement. After you update and publish the blueprint in vRealize Automation 7.0.1, you must recreate its needed approval policies and entitlements.

Some multi-machine blueprint settings are not supported in the target vRealize Automation deployment, including private network profiles and routed network profiles with associated PLR edge settings. Note that if you have used a custom property to specify PLR edge settings (VCNS.LoadBalancerEdgePool.Names), the custom property is upgraded.

If the multi-machine blueprint uses vSphere endpoints and NSX network and security settings, the upgraded composite blueprint also contains NSX network and security components in the design canvas.

Note   Routed gateway specifications for multi-machine blueprints, as defined in reservations, are upgraded. However, the target vRealize Automation deployment does not support reservations for routed profiles that contain associated PLR edge settings. If the source reservation contains a routed gateway value for a PLR edge, the reservation is upgraded but the routed gateway setting is ignored. As a result, the upgrade generates an error message in the log file and the reservation is disabled.

During upgrade, spaces and special characters are removed from referenced network and security component names.

Depending on the setting type, the network and security information is captured as several settings in the new blueprint.

- Settings for the overall blueprint on its properties page. This information includes app isolation, transport zone, and routed gateway or NSX edge reservation policy information.

- Available settings for vSphere machine components in NSX network and security components in the design canvas.

- Settings in the network and security tabs of individual vSphere machine components in the design canvas.

Upgrade and Physical Endpoints, Reservations, and Blueprints

You cannot upgrade a deployment that contains physical endpoints. The presence of endpoints of type physical prevents the vRealize Automation upgrade process from completing.

When upgrade encounters a physical endpoint in the source deployment, upgrade fails on the master virtual appliance and reports a message in the user interface and log. You can determine if your source deployment contains physical endpoints by logging in to vRealize Automation with Iaas Administrator privileges, selecting **Infrastructure > Endponts** and noting the platform type value in the endpoints list. If the list contains endpoints of `Platform Type Physical`, upgrade is not supported.

Physical endpoints, reservations, and machine components in blueprints are not currently supported in the target vRealize Automation deployment.

You can obtain and use the generic endpoint framework to create physical endpoints and physical reservations. You can also use the generic endpoint framework to create physical machine components for use in the blueprint design canvas.

For information about obtaining and using the generic endpoint framework, contact your vRealize Automation support professional.

Upgrade and Network Profile Settings

Private network profiles are not supported in the target deployment and are ignored during the upgrade. Routed network profiles with associated PLR edge settings are also not supported in the target deployment and are also ignored during the upgrade.

The private network profile type is not supported in the target vRealize Automation deployment. When the vRealize Automation upgrade executable encounters a private network profile in the source deployment, it ignores the network profile. Load balancers that reference those private networks are also ignored during upgrade. The same upgrade conditions are true for a routed network profile with associated PLR edge settings. Neither network profile configuration is upgraded.

If a reservation contains a private network profile, the private network profile setting is ignored during upgrade and the reservation is upgraded as disabled in the target deployment.

If a reservation contains a routed network profile with associated PLR edge settings, the routed network profile specification is ignored during upgrade and the reservation is upgraded as disabled in the target deployment.

For information about upgrading a multi-machine blueprint that contains network settings, see Understanding How Multi-Machine Blueprints Are Upgraded.

Upgrade and Entitled Actions

You cannot upgrade machine actions.

The actions that you are entitled to perform on provisioned machines, based on blueprint specifications, are not upgraded. To recreate allowed machine actions, customize the entitlements for blueprints to enable only certain actions.

Upgrade and Custom Properties

All the custom properties that vRealize Automation supplies are available in the upgraded deployment. Custom properties and property groups are upgraded.

Terminology and Related Changes

All the build profiles that you created in the source deployment are upgraded as property groups. The term *build profile* has been retired.

The term *property set* has been retired and CSV property set files are no longer available.

Reserved Property Names

Several keywords are now reserved and some upgraded properties might be impacted. Some keywords are used by the blueprint code that can be imported, for example by using vRealize CloudClient blueprint import functions. These keywords are considered reserved and are not available for properties that are being upgraded. The keywords include but are not limited to `cpu`, `storage`, and `memory`.

Upgrade and Application Services

Application Services upgrade is not currently supported in the target vRealize Automation deployment.

Upgrade and Advanced Service Design

When you upgrade to the target vRealize Automation deployment, your Advanced Service Design items are upgraded to Advanced Service Designer elements.

Advanced Service Designer components are available for use in the blueprint design canvas.

Upgrade and Blueprint Cost Information

As of 7.0, vRealize Automation cost profiles are no longer supported and are not migrated into the target deployment during upgrade. However, you can leverage the enhanced integration with vRealize Business to manage your vRealize Automation resource costs.

vRealize Business is now tightly integrated with vRealize Automation and supports the following enhanced costing features.

- Unified location in vRealize Business to define flexible pricing policies for:

    - Infrastructure resource, machine, and application blueprints

    - All types of endpoints in vRealize Automation

    - Any operational cost, one time cost, and cost on custom properties

- Role-based showback reports in vRealize Business

- Fully leverage new features in vRealize Business

Before you upgrade, you can export your existing cost reports from your source vRealize Automation instance for reference. After you complete your upgrade, you can install and configure vRealize Business to handle costing.

Prerequisites for Upgrading vRealize Automation

Before you run the upgrade, review the prerequisites.

System Configuration Requirements

Verify the following system requirements before you begin an upgrade.

- Verify that you are following a supported upgrade path. See the vRealize Automation release notes for a list of supported upgrade paths.

- Verify that all appliances and servers that are part of your deployment meet the system requirements for the version you are upgrading to. See the *vRealize Automation Support Matrix* on the VMware Web site at https://www.vmware.com/support/pubs/vcac-pubs.html.

- If you are using a vSphere SSO, verify that it is a supported version and at the correct patch level. See the *vRealize Automation Support Matrix* for information about supported versions

- Consult the *VMware Product Interoperability Matrix* on the VMware Web site for information about compatibility with other VMware products.

General Prerequisites

Verify that the following prerequisites are finished before you begin an upgrade.

- Your source installation is fully installed and configured.

- Microsoft Distributed Transaction Coordinator (MSDTC) is enabled on all vRealize Automation and associated SQL servers. For instructions, see the VMware Knowledge Base article *Various tasks fail after upgrading or migrating to VMware vCloud Automation Center (vCAC) 6.1.x (2089503)* at http://kb.vmware.com/kb/2089503.

- You have backups for vRealize Appliance configuration files in the following directories for each appliance.

    - `/etc/vcac/`

    - `/etc/vco/`

    - `/etc/apache2/`

    - `/etc/rabitmq/`

- You have backups for all databases.

- You have backups for any files you have customized, such as `DataCenterLocations.xml`.

- You have a snapshot of your virtual appliances and IaaS servers.

- You perform the upgrade at a time when the system is not in heavy use.

- You have followed the instructions in Shut Down vCloud Automation Center Services on Your IaaS Windows Server.

Order of Upgrade for Integrations

Review the following table for information about the order of upgrade for other VMware components integrated with your vRealize Automation deployment.

If your site uses ...	Take this action
vCloud Automation Center Designer, formerly vCloud Automation Center Designer	If your site includes vCloud Automation Center Designer, uninstall it. After the upgrade is finished, install the 6.2.x version provided on the VMware Appliance Install download page. For more information about installing and using vCloud Automation Center Designer, see *Machine Extensibility* .
An external vRealize Orchestrator appliance	If your deployment uses an external vRealize Orchestrator appliance and it is connected to the Identity Appliance, upgrade vRealize Orchestrator before you upgrade vRealize Automation.

Preparing to Upgrade vRealize Automation

3

You must download updates for the virtual appliances and shut down services on instances of your vRealize Appliance and IaaS servers before you begin the upgrade.

This chapter includes the following topics:

- Backing up and Saving Your Existing Environment
- Shut Down vCloud Automation Center Services on Your IaaS Windows Server
- Prepare a Clustered PostgreSQL Environment for Upgrade
- Increase vCenter Server Hardware Resources for Upgrade
- Create a SaaS Schema and Citext Extension for External vRealize Automation Database
- Downloading Virtual Appliance Updates

Backing up and Saving Your Existing Environment

Before you begin an upgrade process, you complete the backup prerequisites.

Prerequisites

- Verify that your source installation is fully installed and configured.
- Backup vRealize Appliance configuration files in the following directories for each appliance.
    - `/etc/vcac/`
    - `/etc/vco/`
    - `/etc/apache2/`
    - `/etc/rabbitmq/`
- Backup all databases.
- Create a snapshot of your tenant configuration and the users assigned.
- Backup any files you have customized, such as `DataCenterLocations.xml`.
- Create a snapshot of your virtual appliances and IaaS servers. Adhere to regular guidelines for backing up the entire system in case vRealize Automation upgrade fails for whatever reason. See *Configuring vRealize Suite 6.0 for Backup and Restore* topics in vRealize Suite documentation.

Back Up Your Existing Environment

Before you begin to upgrade, shut down the vRealize Automation IaaS Windows Server and all Manager machines and Identity virtual appliance machines and take a snapshot. If the upgrade fails, you can use the snapshot to return to the last known good configuration and attempt another upgrade.

Prerequisites

- Verify that the embedded PostgreSQL server is in high-availability mode. If it is, locate the current Master node. See the knowledge base article http://kb.vmware.com/kb/2105809.

- If the vRealize Automation MSSQL database is not hosted on the IaaS server, create a database backup file.

- Verify that you have completed the backup prerequisites. See Backing up and Saving Your Existing Environment.

- Verify that you have taken snapshot of your system while it is shut down. See the *vSphere 6.0 Documentation.*

  If you cannot shut down your system you can take an in-memory snapshot of all the nodes.

- Verify that you backup your entire system. See *Configuring vRealize Suite 6.0 for Backup and Restore by Using Symantec NetBackup 7.6* at
  http://www.vmware.com/pdf/vrealize-suite-60-backup-and-restore-netbackup.pdf.

Procedure

1 Log in to vCenter Server.

2 Locate the vRealize Automation 6.2.x IaaS Windows Server, all Manager machines, and Identity virtual appliance machines.

3 Select a machine and click **Shutdown guest** in the following order.

   a IaaS Windows Server machine

   b Manager machines (if any)

   c Identity virtual appliance

4 Take a snapshot of all the vRealize Automation 6.2.x machines.

5 If y If your 6.2 deployment includes a fourth virtual disk, create a backup and save it.

   a Backup the machine that contains Disk 4.

   b Clone the machine.

6   If you created in-memory snapshots, continue to the next step. Otherwise. power on the entire system.

For instructions, see the vRealize Automation 6.2 version of the Start Up vRealize Automation topic at http://pubs.vmware.com/vra-62/topic/com.vmware.vra.system.administration.doc/GUID-4A4BD979-61EF-4590-AEDF-6A9BA42426B6.html.

Note   The topic should have vra-62 in the URL.

7   Verify that the system is fully functional.

What to do next

Shut Down vCloud Automation Center Services on Your IaaS Windows Server

Before you begin the upgrade, shut down vCloud Automation Center services on your IaaS Windows Server.

For distributed installations, shut down vCloud Automation Center services in the recommended order for all servers that are running IaaS services.

Procedure

1   Log in to your IaaS Windows Server.

2   Select **Start > Administrative Tools > Services**.

3   Shut down services in the following order.

    a   All VMware vCloud Automation Center agents

    b   All VMware DEM workers

    c   VMware DEM orchestrator

    d   VMware vCloud Automation Center Manager Service

What to do next

Choose a method for downloading the virtual appliance updates. See Downloading Virtual Appliance Updates for more information.

Prepare a Clustered PostgreSQL Environment for Upgrade

If your high-availability deployment relies on a clustered PostgreSQL server, either embedded or external, you must configure each vRealize Automation appliance node for upgrade.

Procedure

◆ If you are upgrading a 6.2.x high-availability setup with an embedded PostgreSQL database and there is an external Load Balancer pool configured especially for PostgreSQL database, remove the external LB pool for PostgreSQL.

What to do next

Increase vCenter Server Hardware Resources for Upgrade

Increase vCenter Server Hardware Resources for Upgrade

Before you proceed with upgrade you must increase hardware resources for each vRealize Appliance.

These steps are based on the Windows client.

Procedure

1 Log in to vCenter Server.

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 Extend the size of Disk 1 to 50 GB.

   a Select Disk 1.

   b Change the size to 50 GB.

   c Click **OK**.

6 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 machine and create Disk 4 with 50 GB disk size.

   b If you have two disks, add Disk 3 with 25 GB disk size first and then Disk 4 with 50 GB disk size.

7 Click **Add** above the Resources table to add a virtual disk.

8 Select **Hard Disk** for the Device Type.

9 Click **Next**.

10 Select **Create a new virtual disk**.

11 Select **Thin Provision**.

12 Click **Next**.

13 Set Disk Size value to **50 GB**.

14 Select **Store with the virtual machine**.

15 Click **Next**.

16 Verify that the `Independent` option is unchecked for Virtual Disk Mode choose SCSI (0:3).

17 Click **Next**.

If prompted to accept recommended settings, accept the recommended settings.

18 Click **Finish**.

19 Click **OK**.

What to do next

Create a SaaS Schema and Citext Extension for External vRealize Automation Database.

Create a SaaS Schema and Citext Extension for External vRealize Automation Database

For an external PostgreSQL server, you need to manually create a schema called saas and a citext extension for your vRealize Automation database.

Do not perform these steps if you are using an embedded PostgreSQL database on your vRealize Automation appliances.

Prerequisites

Verify that you have recorded the vRealize Automation database name and database user. You need that information to perform this task.

Procedure

1 If you are using an external clustered PostreSQL database, log in to the master PostgreSQL node. Otherwise, log in to your standalone external PostgreSQL node.

2 Run the following command to manually create the required saas schema and citext extension.

The following example uses a psql binary path for vPostgres. Your path might be different based on your operating system and the implementation of PostgreSQL that you use.

```
# command to create "saas" schema and citext extension:
su - postgres -c "/opt/vmware/vpostgres/current/bin/psql -Atw --set ON_ERROR_STOP=on
VCAC_DATABASE" <<
EOF
CREATE SCHEMA saas AUTHORIZATION VCAC_USER;
CREATE EXTENSION IF NOT EXISTS "citext" SCHEMA saas;
EOF
```

Replace *VCAC_DATABASE* and *VCAC_USER* with your vRealize Automation database name and database user. The default database name and default user name are `vcac`.

What to do next

Download the virtual appliance upgrade. See Downloading Virtual Appliance Updates.

Downloading Virtual Appliance Updates

You can check for updates from the client management page for your appliance and download the updates by using one of several methods.

- Download Virtual Appliance Updates from a VMware Repository

  You can download the update for your Identity Appliance or vCloud Automation Center appliance from a public repository on the vmware.com Web site.

- 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 the virtual CD-ROM drive.

Download Virtual Appliance Updates from a VMware Repository

You can download the update for your Identity Appliance or vCloud Automation Center appliance from a public repository on the vmware.com Web site.

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) Set how often to check for updates in the Automatic Updates panel.

6   Select **Use Default Repository** in the Update Repository panel.

     The default repository is set to the correct VMware.com URL.

7   Click **Save Settings**.

What to do next

- GUID-37795576-B015-4272-8C97-1866B1B47270#GUID-37795576-B015-4272-8C97-1866B1B47270.

- If you have completed the update to the Identity Appliance or if you use another VMware appliance to support Single Sign-On capabilities, go to Install the Update on the vRealize Automation Appliance.

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 the virtual CD-ROM drive.

Prerequisites

- GUID-1317C4F0-94AD-47A5-AC2F-AF25DF4C20A6#GUID-1317C4F0-94AD-47A5-AC2F-AF25DF4C20A6.

- All CD-ROM drives you use in your upgrade must be enabled before any vCloud Automation Center Appliances are updated. 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 the vmware.com Web site.

2. Connect the CD-ROM drive for the virtual appliance you are updating to the ISO file you downloaded.

3. Go to the management console for your virtual appliance by using its fully qualified domain name, https://*va-hostname.domain.name*:5480.

4. Log in with the user name root and the password you specified when the appliance was deployed.

5. Click the **Update** tab.

6. Click **Settings**.

7. Under Update Repository, select **Use CDROM Updates**.

8. Click **Save Settings**.

What to do next

- GUID-37795576-B015-4272-8C97-1866B1B47270#GUID-37795576-B015-4272-8C97-1866B1B47270.

- If you have completed the update to the Identity Appliance or if you use another VMware appliance to support Single Sign-On capabilities, go to Install the Update on the vRealize Automation Appliance.

Installing the Virtual Appliance Updates

<div style="text-align: right">4</div>

After you complete prerequisites for upgrading and download the update, you install updates for the Identity Appliance and for all instances of the vRealize Appliance. You can also choose to upgrade from an Identity Appliance or vSphere SSO appliance to vCenter Platform Services Controller (PSC).

Your vRealize Automation upgrade does not affect vSphere appliances, however, you must reconfigure vRealize Automation settings when you upgrade to PSC from an earlier version of the vSphere SSO or when you replace an Identity Appliance with PSC. For more information, see GUID-7F8DC8B7-2B3E-4461-982B-4DB13BF1FF0E#GUID-7F8DC8B7-2B3E-4461-982B-4DB13BF1FF0E.

This chapter includes the following topics:

- Upgrade the External PostgreSQL Virtual Appliance
- Reconfigure Disk 1 on All vRealize Automation Appliance Nodes
- Install the Update on the vRealize Automation Appliance
- Update Your Single-Sign On to the VMware Identity Manager Utility
- Update the License Key
- Migrate Identity Stores to the VMware Identity Manager
- Install the Update on Additional vRealize Automation Appliances

Upgrade the External PostgreSQL Virtual Appliance

If you have an external PostgreSQL virtual appliance, you must upgrade the appliance. The upgrade works on the vRealize Appliance with the vPostgres server only. You cannot upgrade using Linux with the installed PostgreSQL community edition.

Note The external PostgreSQL appliance upgrade must meet the same hardware requirements as a vRealize Appliance. See #unique_6_Connect_42_section_E96D14B055FD4AE2B759DA8502FE8993.

Prerequisites

Verify that you have downloaded the virtual appliance updates. See Downloading Virtual Appliance Updates.

Procedure

1   Locate the vRealize Automation appliance and power it on.

2   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.

3   Click **Settings**.

4   Select to download the updates from a default repository, specified repository, or CDROM in the Update Repository section.

5   Click **Status**.

6   Click **Check Updates** to verify that an update is accessible.

7   Click **Install Updates**.

8   Click **OK**.

An informational message stating that the update is in progress appears.

9   Open the log files to verify that upgrade is progressing successfully.

`/opt/vmware/var/log/vami/vami.log`

The time it takes for the update to finish depends on your site environment.

10   Clear the cache of your Web browser to access the management console.

11   If your deployment uses a load balancer, repeat these steps for each Postgres appliance.

Leave the second and subsequent Postgres appliances disabled for load balance traffic when you apply the update.

12   Reconnect all virtual appliances to the load balancer.

What to do next

Install the Update on the vRealize Automation Appliance

Reconfigure Disk 1 on All vRealize Automation Appliance Nodes

The upgrade process requires 5.3 GB of free space for the upgrade files. Only perform this procedure if you have less than 5.3 GB of free space on the Disk 1 root partition.

Note   Perform this procedure on each replica appliance node sequentially, and then on the master node.

Procedure

1   Power on the host machine and use SSH to log in to the vRealize Automation appliance.

2   Stop each of the following services.

      a   service vcac-server stop

      b   service vco-server stop

      c   service vpostgres stop

3   Unmount the swap partition:

    `swapoff –a`

4   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   Change the swap partition type.

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

6   Set the Disk 1 bootable flag:

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

7   Register the partition changes with the Linux kernel.

    `partprobe`

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

8   Format the new swap partition.

    `mkswap /dev/sda2`

9   Mount the swap partition.

    `swapon –a`

10   Reboot the vRealize Automation appliance.

11   After the appliance reboots, resize the Disk 1 partition table.

    `resize2fs /dev/sda1`

12   Verify that the disk expansion is successful by running `df –h` and checking that the available disk space on `/dev/sda1` is greater than 3 GB.

13   Repeat steps 1–11 on all other vRealize Automation appliances.

14   Shut down all replica vRealize Automation appliance nodes.

What to do next

Install the Update on the vRealize Automation Appliance

Install the Update on the vRealize Automation Appliance

You install the update on the vRealize Appliance after you upgrade and reboot the Identity Appliance. Apply the update to each instance of vRealize Appliance in your installation.

Note   If your deployment uses a load balancer, disable all but one vRealize Appliance for load balancer traffic. The first appliance you plan to upgrade must be connected to the load balancer. All other instances of vRealize Appliance must be disabled for load balancer traffic when you upgrade them.

If you are using a vRealize Appliance as a dedicated appliance database server, update it before you update a vRealize Appliance used as an application server.

Wait for the reboot to complete on one appliance before starting the upgrade on another.

Prerequisites

- Select a download method and download the update. See Downloading Virtual Appliance Updates.

- For high-availability deployments, GUID-1317C4F0-94AD-47A5-AC2F-AF25DF4C20A6#GUID-1317C4F0-94AD-47A5-AC2F-AF25DF4C20A6.

- Verify that the identity server is running.

- Before you apply the appliance upgrade for deployments that use load balancers, disable traffic for all nodes except the first node you that you plan to upgrade in order to prevent cache errors.

Procedure

1   Log in to the vRealize Appliance management console and click the **Update** tab.

   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 **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   Read the note about participation in the Customer Experience Improvement Program.

   Participation is automatically enabled when you upgrade. See *System Administration* for information about setting parameters for data collection and enabling and disabling participation after installation.

   ```
   You are enrolled in Customer Experience Improvement Program (CEIP) during this
   upgrade. More information about program here: vRealize Automation product documentation. You
   can opt-out of this program by visiting the "Telemetry" tab in the product management console.
   ```

6   Click **Install Updates**.

7   Click **OK**.

An informational message stating that the update is in progress appears. The time it takes for the update to finish depends on your site environment.

8   Reboot the virtual appliance.

a   Click the **System** tab.

b   Click **Reboot** and confirm your selection.

9   Clear the cache of the Web browser that you use to access the management console.

10   Verify that 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 twenty-one services.

11   If your deployment uses a load balancer, repeat these steps for each vRealize Appliance.

Leave the second and subsequent vRealize Appliance disabled for load balance traffic when you apply the update.

12   Reconnect all virtual appliances to the load balancer.

What to do next

Upgrade the IaaS database and servers. See Chapter 5 Upgrading the IaaS Server.

Update Your Single-Sign On to the VMware Identity Manager Utility

After you install the updates, you must update the Single-Sign On utility to the VMware Identity Manager utility and assign a new password.

Procedure

1   Log out of the vRealize Appliance management console and log back in.

2   Select **vRA Settings > SSO** tab.

3   Enter a new VMware Identity Manager password and click **Save Settings**.

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

The new VMware Identity Manager password is accepted.

For a high-availability deployment, the password is applied to the first vRealize Appliance node and propagated to all of the secondary vRealize Appliance nodes.

4   Verify that all of the 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 30 services.

5   Verify that all of the services are registered except the iaas-service.

What to do next

Update the License Key

Update the License Key

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

Procedure

1   Log in to the management console by using its fully qualified domain name `https://va-hostname.domain.name:5480/`.

2   Select **vRA Setting > Licensing** tab.

3   Enter the license key information in the vRealize Appliance.

   Endpoints and quotas are flagged through the end-user license agreements (EULAs).

What to do next

Migrate Identity Stores to the VMware Identity Manager

Migrate Identity Stores to the VMware Identity Manager

As part of upgrading to 7.0.1 from 6.2.x, you migrate identity stores.

Refer to the snapshot of your 6.2.x tenant configuration information as required in the following procedures.

Procedure

1   Create a Local User Account for Your Tenants

   As part of upgrading identity stores, you must set up a tenant with a local user account and assign tenant administrator privileges to the local user account.

2   Connect Your Active Directory to Synchronize Users and Groups

   Connect to your Active Directory to import your users and groups into vRealize Automation using the Directories Management functionality.

3 Migrate Multiple Tenant and IaaS Administrators

If you have multiple vRealize Automation 6.2.x tenants and IaaS administrators, use the tenant migration tool to migrate your tenant administrators into your newly synchronized vsphere.local tenant. Otherwise, you can manually add them to the vsphere.local tenants.

Create a Local User Account for Your Tenants

As part of upgrading 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 have set a new VMware Identity Manager password. See Update Your Single-Sign On to the VMware Identity Manager Utility.

Procedure

1 Log in to the vRealize Automation console with the default system administrator username *administrator* and 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.

4 Click **New**.

5 Create a local user account to assign to the tenant administrator role.

The local user name should be unique to the vsphere.local active directory.

6 Click **OK**.

7 Click the **Administrators** tab.

8 Enter the local user name in the **Tenant administrators** search box and press Enter.

9 Click `Finish`.

10 Repeat these steps for each of your tenants.

11 Log out of the console.

What to do next

Connect Your Active Directory to Synchronize Users and Groups

Connect Your Active Directory to Synchronize Users and Groups

Connect to your Active Directory to import your users and groups into vRealize Automation using the Directories Management functionality.

Perform these steps 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, `https://vra-appliance/vcac/org/tenant_name`.

2 Navigate to **Administration > Directories Management > Directories**.

3 Click **Add Directory**.

4 Enter your specific 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	Uncheck 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 username for the domain admin
Domain Admin Password	Enter the password for the domain admin account.
Bind User UPN	Enter the name of the user who can authenticate the domain. Use the email address format.
Bind DN Password	Enter the Active Directory bind account password for the account that can search for users.

5 Click the **Test Connection** button to test the connection to the configured directory.

6 Click **Save & Next**.

The Select the Domains page with the list of domains appears.

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 you want to synchronize.

    a   Click the **New** icon.

    b   Enter the user domain and click **Find Groups**.

       For example, `dc=vcac,dc=local`.

    c   Click **Select** to select the groups you want to synchronize.

    d   Click **Next**.

    e   On the Select Users page, select the users you want to synchronize and click **Next**.

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

The directory sync process takes some time and it happens in the background.

Migrate Multiple Tenant and IaaS Administrators

If you have multiple vRealize Automation 6.2.x tenants and IaaS administrators, use the tenant migration tool to migrate your tenant administrators into your newly synchronized vsphere.local tenant. Otherwise, you can manually add them to the vsphere.local tenants.

Procedure

1   Login to the management console of the master vRealize Automation appliance you just upgraded.

2   Select the **vRA Settings > SSO** tab.

3   Right-click **Identity Stores Migration Tool** and select **Copy Link Address**.

4   Login to your 6.2.x SSO virtual appliance with SSH .

5   Enter a command of the form `wget --no-check-certificate` *`<URL_address>`* to download the migration zip file.

For example,
`wget –no-check-certificate https://`*`vahostname`*`.vcac.local:`
`5480/service/cafe/download/vra-sso-migration.zip`

6   Unzip the migration file into a folder.

`unzip vra-sso-migration.zip`

7   Change directory to `bin`.

`cd bin`

8   Edit the `migration.properties` file in the bin folder to change the value of property vra.system.admin.username from administrator to administrator@vsphere.local with the full address including tenant extension.

9   Enter the command **`./reassign-tenant-administrators`** to migrate your tenants and IaaS administrators to your newly synchronized vsphere.local tenant.

Even if you see your tenant users assigned in your tenant prior to running this command, you need to run this command to register your users in Horizon to obtain full tenant administrator privileges.

10   Log in to the vRealize Appliance default tenant as tenant administrator and for each tenant verify that under the **Administrators** tab you can see the list of migrated tenant administrators.

What to do next

Upgrade the secondary appliances. See Install the Update on Additional vRealize Automation Appliances.

Install the Update on Additional vRealize Automation Appliances

For a high availability environment, the master virtual appliance is the node that runs embedded Postgres in the Master mode. The other nodes in the environment run the embedded Postgres database in Replica mode. During upgrade, the replica virtual appliance does not require database changes.

Prerequisites

■   Verify that you have downloaded the virtual appliance updates. See Downloading Virtual Appliance Updates.

Procedure

1   Locate the secondary vRealize Automation appliance node and power it on.

2   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.

3   Click **Settings**.

4   Select to download the updates from a default repository, specified repository, or CDROM in the Update Repository section.

5   Click **Status**.

6   Click **Check Updates** to verify that an update is accessible.

7   Click **Install Updates**.

8   Click **OK**.

An informational message stating that the update is in progress appears.

9   Open the log files to verify that upgrade is progressing successfully.

`/opt/vmware/var/log/vami/vami.log` and `/var/log/vmware/horizon/horizon.log`

If you log out during the upgrade process and log in, you can continue to follow the progress of the update in the log file `/opt/vmware/var/log/vami/updatecli.log`.

The time it takes for the update to finish depends on your site environment.

10 Log out of the vRealize Automation appliance, clear the cache of your Web browser, and log in to the vRealize Automation appliance management console.

11 Log in to the vRealize Automation appliance.

12 Select **vRA Settings > Cluster**.

13 Specify the master virtual appliance and click **Join Cluster**.

14 Verify that all of the services appear under the **Service** tab.

What to do next

Download the IaaS Installer

Upgrading the IaaS Server 5

A system administrator upgrades the IaaS server components and the SQL database.

You upgrade the SQL database for IaaS with the `DBUpgrade` command and you upgrade the IaaS server components with the IaaS Installer.

Note You must upgrade the database before you upgrade the IaaS server and its components.

This chapter includes the following topics:

- Download the IaaS Installer
- Upgrade the IaaS Components

Download the IaaS Installer

You download the IaaS installer to the machine where the IaaS components to be upgraded are installed.

If you see certificate warnings during this procedure, you can ignore them.

Prerequisites

- Verify that Microsoft .NET Framework 4.5.1 or later is installed on the IaaS installation machine. You can download the .NET installer from the vRealize Automation installer Web page.

- If you are using Internet Explorer for the download, verify that Enhanced Security Configuration is not enabled. See `res://iesetup.dll/SoftAdmin.htm`.

- Log in as a local administrator to the Windows server where one or more of the IaaS components to be upgraded are installed.

- The IaaS components to be upgraded must be part of vRealize Automation 6.0.1. If they are from vRealize Automation 6.0, then you must upgrade them to vRealize Automation 6.0.1 before you can proceed with this upgrade.

Procedure

1   Open a Web browser.

2   Enter the URL for the Windows installer download page.

    For example, **https://*vcac-va-hostname.domain.name*:5480/installer**, where *vcac-va-hostname.domain.name* is the name of the vRealize Appliance host.

3 Click the **IaaS installer** link.

4 When prompted, save the installer file, setup__*vcac-va-hostname.domain.name*@5480.exe, to the desktop.

Do not change the file name. It is used to connect the installation to the vRealize Appliance.

Upgrade the IaaS Components

You must upgrade the database and configure all systems that have IaaS components installed. You can use these steps for minimal and distributed installations.

If you have multiple IaaS servers, perform the upgrade so that services are upgraded in the following order:

1 Websites

If you are using a load balancer, disable all Websites for load balancer traffic except the Website on which Model Manager data is install. Upgrade the Website on which Model Manager data is installed first.

Finish the upgrade on one server before upgrading the next server that is running a Website service.

2 Manager services

Upgrade the active manager service before you upgrade the passive manager service and reboot the system where the passive manager service is installed.

3 DEM orchestrator and workers

Upgrade all DEM orchestrators and workers. Finish the upgrade on one server before you upgrade the next server.

4 Agents

Finish the upgrade on one server before you upgrade the next server that is running an agent.

If you are using different services on one server, the upgrade updates the services in the proper order. For example, if your site has Website and manager services on the same server, select both for update. The upgrade installer applies the updates in the proper order. You must complete the upgrade on one server before you begin an upgrade on another.

Note If your deployment uses a load balancer, the first appliance you plan to upgrade must be connected to the load balancer. All other instances of vRealize Appliance appliances must be disabled for load balancer traffic before you apply the upgrade to avoid caching errors.

Prerequisites

- Shut Down vCloud Automation Center Services on Your IaaS Windows Server

- Download the IaaS Installer.

- GUID-12DC45F9-E003-45C1-8826-D1636790F20D#GUID-12DC45F9-E003-45C1-8826-D1636790F20D.

Procedure

1 If you are using a load balancer, prepare your environment.

    a   Verify that the Website on which Model Manager data is installed is enabled for load balancer traffic.

        You can identify this node by the presence of the `<vCAC Folder>\Server\ConfigTool` folder.

    b   Disable all other Websites for load balancer traffic.

2 Right-click the `setup__`*`vra-va-hostname.domain.name`*`@5480.exe` setup file and select **Run as administrator**.

3 Click **Next**.

4 Accept the license agreement and click **Next**.

5 Type the administrator credentials for your current deployment on the Log In page.

    The user name is root and the password is the password that you specified when you deployed the appliance.

6 Select **Accept Certificate**.

7 Select **Upgrade** on the **Installation Type** page and click **Next**.

8 Configure the upgrade settings.

Option	Action
If you are upgrading the Model Manager Data	Select the **Model Manager Data** check box in the vCAC Server section.
	The check box is selected by default. Upgrade the Model Manager data only once. If you are running the setup file on multiple machines to upgrade a distributed installation, the Web servers stop functioning while there is a version mismatch between the Web servers and the Model Manager data. When you have upgraded the Model Manager data and all of the Web servers, all of the Web servers should function.
If you are not upgrading the Model Manager Data	Unselect the **Model Manager Data** check box in the vCAC Server section.
To preserve customized workflows as the latest version in your Model Manager Data	If you are upgrading the Model Manager Data, select the **Preserve my latest workflow versions** check box in the Extensibility Workflows section.
	The check box is selected by default. Customized workflows are always preserved. The checkbox determines version order only. If you used vCloud Automation Center Designer to customize workflows in the Model Manager, select this option to maintain the most recent version of each customized workflow before upgrade as the most recent version after upgrade.
	If you do not select this option, the version of each workflow provided with vCloud Automation Center Designer 6.1 becomes the most recent after upgrade, and the most recent version before upgrade becomes the second most recent. For information about vCloud Automation Center Designer, see *Extensibility*.

Option	Action
If you are upgrading a Distributed Execution Manager or a proxy agent	Enter the credentials for the administrator account in the Service Account section. All of the services that you upgrade run under this account.
To specify your Microsoft SQL Server database	If you are upgrading the Model Manager Data, enter the names of the database server and database instance in the **Server** text box in the Microsoft SQL Server Database Installation Information section. Use a fully qualified domain name (FQDN) for the database server name.
	If the database instance is on a non-default SQL port, include the port number in the server instance specification. The Microsoft SQL default port number is 1433.

9   Click **Next**.

10 Confirm that all services to upgrade appear on the Ready to Upgrade page, and click **Upgrade**.

The Upgrading page and a progress indicator appear. When the upgrade process finishes, the **Next** button is enabled.

11 Click **Next**.

12 Click **Finish**.

13 Verify that all services restarted.

14 If the DEM orchestrator, DEM workers, or agents are installed on the same server where Model Manager Data has been upgraded, reboot the appliance.

15 Repeat these steps for each IaaS server in your deployment in the recommended order.

16 If your deployment uses a load balancer, reenable load balancer traffic for any unconnected nodes.

17 After all components are upgraded, log in to the management console for the appliance and verify that all services, including IaaS, are now registered.

All of the selected components are upgraded to the new release.

Upgrade Stand-alone External vRealize Orchestrator for Use with vRealize Automation

6

If you maintain a stand-alone, external instance of vRealize Orchestrator for use with vRealize Automation, you must upgrade when you upgrade vRealize Automation.

Embedded instances of vRealize Orchestrator are upgraded as part of the vRealize Automation appliance upgrade. No additional action is required.

If you are upgrading a vRealize Orchestrator appliance cluster, see Chapter 7 Upgrade External vRealize Orchestrator Appliance Clusters,

For more information about upgrading external vRealize Orchestrator, see vRealize Orchestrator upgrade documentation.

Prerequisites

- Install the Update on the vRealize Automation Appliance

- Upgrade IaaS components as described in Chapter 5 Upgrading the IaaS Server

Procedure

1   Shut down the vRealize Orchestrator node.

2   Take a snapshot.

3   Power on the vRealize Orchestrator node.

4   Log in to the vRealize Orchestrator appliance configuration portal at https://*orchestrator_server*:5480.

5   Select your upgrade method based on the instructions in the vRealize Orchestrator documentation.

6   Select the Update tab in your configuration portal and click **Settings**.

7   Choose your download method and click **Save Settings**.

8   Click **Status.**

9   Click **Check Updates**.

10   Click **Install Updates**.

   To proceed with the upgrade, you must accept the VMware End User License Agreement.

11   To complete the update, restart the vRealize Orchestrator appliance.

12 Login with root credentials to ControlCenter by going to https://
your_orchestrator_server_IP_or_DNS_name:8283/vco-controlcenter in a Web browser.

13 Unregister the instance.

    a   Navigate to Configuration Authentication Provider.

    b   Click **Unregister**.

    c   Reregister the instance by selecting **Connect** and entering your credentials.

14 Verify that the vco service appears as REGISTERED in the vRealize Appliance.

15 From the Control Center, upgrade the vRealize Automation default plugins, which include vCAC Cafe and vCAC IaaS and NSX.

Upgrade External vRealize Orchestrator Appliance Clusters

7

If you use a clustered external instances of vRealize Orchestrator with vRealize Automation, you must upgrade each vRealize Orchestrator node individually when you upgrade vRealize Automation.

You do not need to recreate the cluster. vRealize Orchestrator nodes remain part of the cluster after the upgrade.

For more information about upgrading external vRealize Orchestrator, see vRealize Orchestrator upgrade documentation.

Prerequisites

- Install the Update on the vRealize Automation Appliance

- Upgrade IaaS components as described in Chapter 5 Upgrading the IaaS Server

Procedure

1 Access the vRealize Orchestrator appliance configuration portal at https://*orchestrator_server*:5480.

2 Log in to the vRealize Orchestrator appliance configuration portal as an administrator.

3 Shut down all of the vRealize Orchestrator instance nodes.

4 Take the snapshots.

5 Power on the vRealize Orchestrator instance node.

> **Note**   Record identifying information for the first node. You use this information later in the procedure.

6 Upgrade the vRealize Orchestrator instance node.

7 From the Authentication tab, unregister the node from the Control Center.

8 Verify that the **Configure license** checkbox is selected.

9 Register the node again by selecting **Register** from the Authentication tab.

10 Restart the vRealize Orchestrator service.

11 Verify that the vco service appears as REGISTERED in the vRealize Appliance.

You can monitor the startup of the service by selecting **Live Log Stream** in your Control center. Once you see the messaging that 7.0 orchestrator is started, the service startup is complete.

12 Log in to the vRealize Appliance as a system administrator.

13 Power on the next vRealize Orchestrator node.

14 Repeat steps 6-13 for each vRealize Orchestrator node.

15 Log in to the Control Center of the first vRealize Orchestrator at `https://vrohost1:8283/vco-controlcenter`.

16 Navigate to **Manage Plugins**.

17 Select **Browse >** *plugin-name* **> Install**.

18 Restart vco-server in your control center

19 Wait for services to start on the first node, and then repeat steps 15-18 for each vRealize Orchestrator node.

20 From the Control Center, upgrade the vRealize Automation default plugins, which include vCAC Cafe and vCAC IaaS and NSX.

Add Users or Groups to an Active Directory Connection

<div style="text-align: right; font-size: 3em;">8</div>

You can add users or groups to an existing Active Directory connection.

The Directories Management user authentication system imports data from Active Directory when adding groups and users, and the speed of the system is limited by Active Directory capabilities. As a result, import operations may require a significant amount of time depending on the number of groups and users being added. To minimize the potential for delays or problems, limit the number of groups and users to only those required for vRealize Automation operation. If performance degrades or if errors occur, close any unneeded applications and ensure that your deployment has appropriate memory allocated to Active Directory. If problems persist, increase the Active Directory memory allocation as needed. For deployments with large numbers of users and groups, you may need to increase the Active Directory memory allocation to as much as 24 GB.

When running a synchronize operation for a vRealize Automation deployment with a many users and groups, there may be a delay after the `Sync is in progress` message disappears before the Sync Log details are displayed. Also, the time stamp on the log file may differ from the time that the user interface indicates that the synchronize operation completed.

Note You cannot cancel a synchronize operation after it has been initiated.

Prerequisites

- Connector installed and the activation code activated. Select the required default attributes and add additional attributes on the User Attributes page.

- List of the Active Directory groups and users to sync from Active Directory.

- For Active Directory over LDAP, information required includes the Base DN, Bind DN, and Bind DN password.

- For Active Directory Integrated Windows Authentication, the information required includes the domain's Bind user UPN address and password.

- If Active Directory is accessed over SSL, a copy of the SSL certificate is required.

- For Active Directory Integrated Windows Authentication, when you have multi-forest Active Directory configured and the Domain Local group contains members from domains in different forests, make sure that the Bind user is added to the Administrators group of the domain in which the Domain Local group resides. If this is not done, these members are missing from the Domain Local group.

■ Log in to the vRealize Automation console as a **tenant administrator**.

Procedure

1 Select **Administration > Identity Stores**

2 Click the desired directory name.

3 Click **Sync Settings** to open a dialog with synchronization options.

4 Click the appropriate icon depending on whether you want to change the user or group configuration.

To edit the group configuration:

■ To add groups, click the **+** icon to add a new line for group DN definitions and enter the appropriate group DN.

■ If you want to delete a group DN definition, click the **x** icon for the desired group DN.

To edit the user configuration:

◆ To add users, click the **+** icon to add a new line for user DN definition and enter the appropriate user DN.

If you want to delete a user DN definition, click the **x** icon for the desired user DN.

5 Click **Save** to save your changes without synchronizing to make your updates immediately, or click **Save & Sync** to save your changes and synchronize to implement your updates immediately.

Enable Your Load Balancers

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If your deployment uses load balancers, enable them for the installation according to documentation from you load balancer vendor.

Post-Upgrade Tasks for vRealize Automation

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After you upgrade vRealize Automation, perform any required post-upgrade tasks.

This chapter includes the following topics:

Port Configuration for High-Availability Deployments

After finishing an upgrade in a high availability deployment, you must configure the load balancer to pass traffic on port 8444 to the vRealize Appliance to support remote console features.

Enabling the Connect to Remote Console Action for Consumers

The remote console action for consumers is supported for appliances provisioned by vSphere in vRealize Automation 6.2.1 and later. You must modify blueprints created in 6.2.0 to enable this feature.

Edit the blueprint after you have upgraded the release and select the **Connect to Remote Console** action on the **Action** tab.

If your blueprint was created in 6.1 and the **Connect to Remote Console** action was enabled, the action is automatically reenabled in 6.2.1 and later releases and you are not required to edit the blueprint.

For more information, see Knowledge Base article 2109706.

Reconfigure External Workflow Timeouts

You must reconfigure the vRealize Automation external workflow timeouts because the upgrade process overwrites the xmldb file.

Procedure

1 Open the xmldb file on your system.

   `\VMware\vCAC\Server\ExternalWorkflows\xmldb`.

2 Reconfigure the external workflow timeout settings.

3 Save your settings.

Reconfigure Embedded vRealize Orchestrator Infrastructure Endpoint in the Target vRealize Automation

When you migrate from a vRealize Automation 6.2.x environment, you must update the URL of the infrastructure endpoint that points to the target embedded vRealize Orchestrator server.

Prerequisites

- Successfully migrate to vRealize Automation 7.3.

- Log in to the target vRealize Automation console.

   a   Open the vRealize Automation console using the fully qualified domain name of the target virtual appliance: https://*vra-va-hostname.domain.name*/vcac.

   For a high-availability environment, open the console using the fully qualified domain name of the target virtual appliance load balancer: https://*vra-va-lb-hostname.domain.name*/vcac.

   b   Log in as a IaaS administrator user.

Procedure

1 Select **Infrastructure > Endpoints > Endpoints**.

2 On the Endpoints page, select the vRealize Orchestrator endpoint, and click **Edit**.

3 In the Address text box, edit the vRealize Orchestrator endpoint URL.

- If you migrated to a minimal environment, replace the vRealize Orchestrator endpoint URL with `https://vra-va-hostname.domain.name:443/vco`.

- If you migrated to a high-availability environment, replace the vRealize Orchestrator endpoint URL with `https://vra-va-lb-hostname.domain.name:443/vco`.

4 Click **OK**.

5 Manually run a data collection on the vRealize Orchestrator endpoint.

   a   On the Endpoints page, select the vRealize Orchestrator endpoint.

   b   Select **Actions > Data Collection**.

   Verify that the data collection is successful.

Configure an External PostgreSQL Database to Merge into an Embedded PostgreSQL Environment

After you upgrade the master node in the vRealize Appliance you can optionally configure the external PostgreSQL database to merge into an embedded PostgreSQL master node.

This is the last task in the upgrade process. You can perform this task anytime after upgrade is finished.

This task is not required if it is not applicable to your deployment environment.

Prerequisites

Verify that the master node in the vRealize Appliance is upgraded.

Procedure

1 Select your master vRealize Appliance as described in the knowledge base article at
   http://kb.vmware.com/kb/2105809.

2 Log in to the primary virtual appliance by using SSH.

3 Navigate to the `/etc/vcac/server.xml` file to verify that the jdbc:postgresql database connection points to the external IP address of the master virtual appliance.

4 Open a command-line prompt and check the vPostgres service status.

   `service vpostgres status`

   If the service is not running, enter the **`service vpostgres start`** command.

5 Enter the merge command.

   `vcac-vami db-merge-external`

6 Reboot the primary virtual appliance.

7 Wait for the primary virtual appliance to start.

8 Verify that all of the services are running with the exception that the IaaS-service should appear as REGISTERED.

Post vRealize Code Stream Upgrade

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During an upgrade from vRealize Code Stream 1.0 to vRealize Code Stream 1.2 or 2.0, existing endpoints are added to the appliance and the format of release pipeline variables is updated.

Jenkins Server and vRealize Automation Server Endpoints

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

The updated Jenkins server endpoint name is prefixed with Jenkins_*EndpointName* and the updated vRealize Automation server endpoint name is prefixed with Vra_*EndpointName*.

Release Pipeline Variables

The format of existing release pipeline variable values such as $RP1 and $RP2 are updated to $ {pipeline.RP1} and ${pipeline.RP2} during the upgrade.

Task Output Variables

The format of existing task output variable values such as $*CustomScriptName*_OUTPUT are updated to ${*StageName*.*TaskName*.outputConfig} in the release pipeline during the upgrade.

Variable Names

The format of variable names for manual approval in custom tasks are updated during the upgrade.

Table 11‑1. Variable Name Values

Pre-upgrade Format	Post-upgrade Format
$*ReleasePipelineName*	${*releasePipelineName*}
$*StageName*	${*stageName* }
$*NextStageName*	${*nextStageName*}
$*TaskName*	${*taskName*}
$*NextTaskName*	${*nextTaskName*}

Variable Concatenation

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} during the upgrade.

Troubleshooting the Upgrade

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

This chapter includes the following topics:

- Migration of Identity Store Fails Because the Active Directory is not Synchronized
- Migration of Identity Store Fails Because of Incorrect Credentials
- Migration of Identity Store Fails With a Timeout Error Message
- Installation or Upgrade Fails with a Load Balancer Timeout Error
- Upgrade Fails for Website Component During IaaS Upgrade
- Incorrect Tab Names Appear Intermittently
- Manager Service Fails to Run Due to SSL Validation Errors During Runtime
- Log In Fails After Upgrade
- Retrieve Logs to Troubleshoot the vRealize Code Stream Upgrade

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 > Identity Stores**.

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

he migration of identity store fails because of incorrect Active Directory domain credentials or lack or 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   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

7   Enter the domain, domain username, and password for the active directory domain.

8   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.

Migration of Identity Store Fails With a Timeout Error Message

The timeout configuration does not adequately accommodate the migration process.

Problem

The migration of identity store fails with the following timeout error message.

```
vra-cafe:~/bin # ./migrate-identity-stores
Error: A JNI error has occurred, please check your installation and try again
Exception in thread "main" java.lang.NoClassDefFoundError:
com/vmware/identity/idm/InvalidArgumentException
at java.lang.Class.getDeclaredMethods0(Native Method)
at java.lang.Class.privateGetDeclaredMethods(Class.java:2701)
at java.lang.Class.privateGetMethodRecursive(Class.java:3048)
at java.lang.Class.getMethod0(Class.java:3018)
at java.lang.Class.getMethod(Class.java:1784)
at sun.launcher.LauncherHelper.validateMainClass(LauncherHelper.java:544)
at sun.launcher.LauncherHelper.checkAndLoadMain(LauncherHelper.java:526)
Caused by: java.lang.ClassNotFoundException: com.vmware.identity.idm.InvalidArgumentException
at java.net.URLClassLoader.findClass(URLClassLoader.java:381)
at java.lang.ClassLoader.loadClass(ClassLoader.java:424)
at sun.misc.Launcher$AppClassLoader.loadClass(Launcher.java:331)
at java.lang.ClassLoader.loadClass(ClassLoader.java:357)
... 7 more
```

Cause

The configuration timed out before the migration process could successfully complete.

Solution

1   Open a command-line prompt.

2   Open the executable migrate-identity-stores script.

3   Scroll to the bottom of the script and locate the execution of a java command.

   For example, exec "$JAVACMD" $JAVA_OPTS -Xms256m -Xmx512m -Dverbose=false -Dlog4j.configurationFile=log4j2.xml

4   Increase the system property value for the client socket timeout to one hour.

   –Dclient.system.socket.timeout=3600000.

5   Run the migrate-identity-stores script on the Single-sign on 2.0 server.

What to do next

Start the migration process.

Installation or Upgrade Fails with a Load Balancer Timeout Error

A vRealize Automation installation or upgrade for a distributed deployment with a load balancer fails with a 503 service unavailable error.

Problem

The installation or upgrade fails because the load balancer timeout setting does not allow enough time for the task to complete.

Cause

An insufficient load balancer timeout setting might cause failure. You can correct the problem by increasing the load balancer timeout setting to 100 seconds or greater and rerunning the task.

Solution

1   Increase your load balancer timeout value to at least 100 seconds. For example, and depending on the load balancer you are using, edit the load balancer timeout setting in your `ssl.conf`, `httpd.conf` or other Web configuration file.

2   Rerun the installation or upgrade.

Upgrade Fails for Website Component During IaaS Upgrade

The IaaS upgrade fails and you cannot continue the upgrade.

Problem

The installer cannot update the `web.config` file.

Cause

This occurs when the creation date for the `web.config` file is the same as or later than the modified date.

Solution

1   Before you begin the upgrade, open the `web.config` file in an editor from an account with elevated privileges.

2   Save the file to change the date stamp for modification.

3   Verify that the file modification date for the `web.config` file is later than the creation date.

4   Run the IaaS upgrade.

Incorrect Tab Names Appear Intermittently

IaaS tabs and other tabs might be labeled incorrectly.

Problem

After upgrading a high availability environment from vCloud Automation Center 6.0.x or 6.1 to vRealize Automation 6.2, tabs might intermittently appear with incorrect names.

Solution

Restart all the vRealize Automation virtual appliances to restore the correct tab names.

Manager Service Fails to Run Due to SSL Validation Errors During Runtime

The manager service fails to run due to SSL validation errors.

Problem

The manager service fails with the following error message in the log:

```
[Info]: Thread-Id="6" – context="" token="" Failed to connect to the core database,
will retry in 00:00:05, error details: A connection was successfully established
with the server, but then an error occurred during the login process. (provider: SSL
Provider, error: 0 – The certificate chain was issued by an authority that is not
trusted.)
```

Cause

During runtime, the manager service fails to run due to SSL validation errors.

Solution

1   Open the `ManagerService.config` configuration file.

2   Update **Encrypt=False** on the following line: `<add name="vcac-repository" providerName="System.Data.SqlClient" connectionString="Data Source=iaas-db.sqa.local;Initial Catalog=vcac;Integrated Security=True;Pooling=True;Max Pool Size=200;MultipleActiveResultSets=True;Connect Timeout=200, Encrypt=True" />`.

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.

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.