Upgrading from vRealize Automation 7.0 to 7.1

vRealize Automation 7.1

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Contents

Updated Information

This *Upgrading vRealize Automation* guide is updated with each release of the product or when necessary.

This table provides the update history of the *Upgrading vRealize Automation* guide.

Revision	Description
EN-002176-03	■ Revised "Bad PostgreSQL Service State Stops Upgrade and Displays Error Message," on page 45 in Chapter 8, "Troubleshooting the Upgrade," on page 37 for revision to Bug 1725352.
EN-002176-02	■ Revised "Bad PostgreSQL Service State Stops Upgrade and Displays Error Message," on page 45 in Chapter 8, "Troubleshooting the Upgrade," on page 37 for revision to Bug 1725352. ■ Added "Backup Copies of .xml Files Cause the System to Time Out," on page 45 to Chapter 8, "Troubleshooting the Upgrade," on page 37 for Bug 1716108.
EN-002176-01	■ Revised Chapter 1, "Upgrading vRealize Automation," on page 7 to update information about the vRealize Automation Upgrade Assistance Program. ■ Added "Upgrade Fails to Upgrade the Management Agent or Certificate Not Installed on a IaaS Node," on page 44 to Chapter 8, "Troubleshooting the Upgrade," on page 37 to provide troubleshooting for upgrade issues. ■ Added "Bad PostgreSQL Service State Stops Upgrade and Displays Error Message," on page 45 to Chapter 8, "Troubleshooting the Upgrade," on page 37 for Bug 1725352.
EN-002176-00	Initial release.

Upgrading vRealize Automation

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You can perform an in-place upgrade of your current vRealize Automation environment to 7.1 using upgrade.

Upgrade is a multi-stage process in which you perform procedures in a particular order on the various components in your current environment. You must upgrade all product components to the same version.

NOTE New vRealize Automation features introduce several enhancements along with the ability to upgrade or migrate to the new version. For recommendations and guidance before you begin the upgrade process, visit the vRealize Automation Upgrade Assistance Program web page at http://www.vmware.com/products/vrealize-automation/upgrade-center before you begin the upgrade process.

Locate your current vRealize Automation version in the table and use the documents on the right to perform an in-place upgrade of your vRealize Automation environment to the latest version. 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 1-1. Supported In-Place Upgrade Paths to 7.1

Your Currently Installed Version	Documentation for Incremental Upgrades
vRealize Automation 7.0 or 7.0.1	See Upgrading from vRealize Automation 7.0 to 7.1.
vRealize Automation 6.2.0, 6.2.1, 6.2.2, 6.2.3, or 6.2.4	See http://pubs.vmware.com/vrealize-automation-71/topic/com.vmware.ICbase/PDF/vrealize-automation-71-upgrading.pdf.

NOTE Beginning in 6.2.0, 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.

This chapter includes the following topics:

- "Checklist for Upgrading vRealize Automation Components," on page 7
- "Prerequisites for Upgrading vRealize Automation," on page 9

Checklist for Upgrading vRealize Automation Components

When you perform an upgrade, you update all vRealize Automation components in a specific order.

The order of upgrade varies depending on whether you are upgrading a minimal installation or a distributed installation with multiple vRealize Automation appliances.

Use the checklists 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 about all supported upgrade paths, see the release notes for vRealize Automation, available on the VMware vRealize Automation Documentation landing page.

Table 1-2. Checklist for Upgrade of a Minimal vRealize Automation Deployment

Task	Instructions
☐ Backup your current installation. This is a critical step.	For more information on how to back up and restore your system, see "Back Up Your Environment," on page 12. For general information, see *Configuring Backup and Restore by Using Symantec Netbackup* at http://www.vmware.com/pdf/vrealize-backup-and-restore-netbackup.pdf
☐ If you installed a Common Components Catalog component, you must uninstall it before you upgrade.	For information about how to uninstall, install, and upgrade Common Components Catalog components, see the *Common Components Catalog Installation Guide*.
☐ Configure your hardware resources.	See "Increase vCenter Server Hardware Resources for Upgrade," on page 13.
☐ Download updates to the vRealize Automation appliance.	See "Downloading vRealize Automation Appliance Updates," on page 13.
☐ Install the update on the vRealize Automation appliance.	See "Install the Update on the vRealize Automation Appliance," on page 17.
☐ Download and install updates for IaaS.	See Chapter 4, "Upgrading the IaaS Server Components," on page 23.

Table 1-3. Upgrade to vRealize Automation Distributed Installation Checklist

Task	Instructions
☐ Backup your current installation. This is a critical step.	For more information on how to back up and restore your system, see "Back Up Your Environment," on page 12. For detailed information, see *Configuring Backup and Restore by Using Symantec Netbackup* at http://www.vmware.com/pdf/vrealize-backup-and-restore-netbackup.pdf
☐ If you installed a Common Components Catalog component, you must uninstall it before you upgrade.	For information about how to uninstall, install, and upgrade Common Components Catalog components, see the *Common Components Catalog Installation Guide*.
☐ Configure your hardware resources for the upgrade.	See "Increase vCenter Server Hardware Resources for Upgrade," on page 13.
☐ Download updates to the vRealize Automation appliance.	See "Downloading vRealize Automation Appliance Updates," on page 13.
☐ Install the update on the first vRealize Automation appliance in your installation. If you have designated an appliance as a master, upgrade this appliance first.	See "Install the Update on the vRealize Automation Appliance," on page 17.
☐ Install the update on the rest of your vRealize Automation appliances.	"Install the Update on Additional vRealize Automation Appliances," on page 19

Table 1-3. Upgrade to vRealize Automation Distributed Installation Checklist (Continued)

Task	Instructions
☐ Download and install updates for IaaS.	See Chapter 4, "Upgrading the IaaS Server Components," on page 23.
☐ Enable your load balancers.	Chapter 6, "Enable Your Load Balancers," on page 31

Prerequisites for Upgrading vRealize Automation

Before you run the upgrade, review the following prerequisites.

System Configuration Requirements

Make sure the following system requirements are met before you begin an upgrade.

- Verify that you are following a supported upgrade path. See Chapter 1, "Upgrading vRealize Automation," on page 7 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* at https://www.vmware.com/support/pubs/vcac-pubs.html.

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

- Verify that the vRealize Automation you are upgrading from is in stable working condition. Correct any problems before upgrading.

- If you are upgrading from vRealize Automation 6.2.x, record your vCloud Suite license key if you used it for the vRealize Automation installation you are upgrading from. Upon upgrade, existing license keys are removed from the database. You do not need to do this task if you are upgrading from vRealize Automation 7.x.

Hardware Configuration Requirements

Make sure the following hardware requirements are met before you begin an upgrade.

- You must have at least 18 GB of RAM space before you run the upgrade.

  If the virtual machine is on vCloud Networking and Security, you might need to allocate more RAM space.

- Your CPU must have four virtual sockets and one core. See "Increase vCenter Server Hardware Resources for Upgrade," on page 13.

- Your primary IaaS Web site, Microsoft SQL database, and Model Manager node must have the Microsoft .NET Framework 4.5.2 version and at least 5 GB of free disk space.

- Your primary IaaS Web site, Microsoft SQL database, and Model Manager node must have Java 8, update 91, 64 bit, `jdk-8u91-windows-x64.exe`, installed. After you install Java, you must set the environment variable, JAVA_HOME, to the new version on each server node.

- You must have at least 5.3 GB of free disk space on the root partition of each vRealize Automation appliance to download and run the upgrade.

- Check the `/storage/log` subfolder and remove any older archived ZIP files to clean up space.

General Prerequisites

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

■ You have access to an Active Directory account with a username@domain format and permissions to bind to the directory.

■ You have access to an account with a SAMaccountName format and sufficient privileges to join the system to the domain by creating a computer object dynamically or to merge into a pre-created object.

■ You have access to all databases and all load balancers impacted by or participating in the vRealize Automation upgrade.

■ You make the system unavailable to users while you perform the upgrade.

■ You disable any applications that query vRealize Automation.

■ Verify that 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.

■ If you are upgrading a distributed environment configured with an embedded PostgreSQL database, examine the files in the `pgdata` directory on the master host before you upgrade the replica hosts. Navigate to the PostgreSQL data folder on the master host at `/var/vmware/vpostgres/current/pgdata/`. Close any opened files in the `pgdata` directory and remove any files with a .swp suffix.

■ If you installed a Common Components Catalog component, you must uninstall it before you upgrade. For information about how to uninstall, install, and upgrade Common Components Catalog components, see the *Common Components Catalog Installation Guide*.

Preparing to Upgrade vRealize Automation

<div style="text-align:right">**2**</div>

You must perform various listed tasks and procedures in preparation for upgrading vRealize Automation.

Perform the tasks required for upgrade in the order in which they appear in the checklist. See "Checklist for Upgrading vRealize Automation Components," on page 7.

This chapter includes the following topics:

- "Backing up and Saving Your Existing Environment," on page 11

- "Increase vCenter Server Hardware Resources for Upgrade," on page 13

- "Downloading vRealize Automation Appliance Updates," on page 13

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 Automation 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 Environment

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

Prerequisites

- Beginning with vRealize Automation 7.0, the PostgreSQL database is always configured in high-availability mode. Log in to the management console and select **vRA settings > Database** to locate the current Master node. If the database table shows that the Master node is an external database, create a manual backup of this external database. If the PostgreSQL database Master node is not external, continue with the following procedure.

- If the vRealize Automation Microsoft SQL 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," on page 11 .

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

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

- Verify that you have a backup of your entire system.

Procedure

1. Log in to vCenter Server.

2. Locate the vRealize Automation 7.0 IaaS Windows machines, and vRealize Automation appliance nodes.

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

   a   IaaS Windows Server machines

   b   vRealize Automation appliance nodes

4. Take a snapshot of all the vRealize Automation 7.0 machines.

5. To create a full backup, clone each appliance node and perform the upgrade on the cloned machines. Keep the original, in case system restore is required later on.

6. Power on the system.

   For instructions, see the Start Up vRealize Automation topic at
   http://pubs.vmware.com/vrealize-automation-71/topic/com.vmware.vrealize.automation.doc/GUID-4A4BD979-61EF-4590-AEDF-6A9BA42426B6.html .

   NOTE   If you have a high availability environment, use this procedure to power on your virtual appliances.

   a   Power on the virtual appliance that you powered off last.

   b   Wait one minute.

   c   Power on the remaining virtual appliances.

   ---

7. Verify that the system is fully functional.

What to do next

Increase vCenter Server Hardware Resources for Upgrade

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

If you have taken a snapshot of each vRealize Automation appliance, you must clone each appliance and increase the hardware resources on each clone. Ensure that you have at least 60 GB of free space on each appliance in your VMware vCenter Server ™. After you clone your appliances, power off the original appliances before you perform this procedure on each appliance clone.

NOTE This procedure is only necessary if you upgrade from vRealize Automation 7.0.

These steps are based on the Windows client.

Procedure

1 Log in to vCenter Server.

2 Right-click the cloned vRealize Automation appliance icon and select **Edit Settings**.

3 Extend the size of Disk 1 to 50 GB.

 a Select Disk 1.

 b Change the size to 50 GB.

 c Click **OK**.

4 Click **Finish**.

5 Click **OK**.

6 Create a snapshot of the virtual machine.

What to do next

Download the update. For more information, see.

Downloading vRealize Automation Appliance Updates

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.

■

 You can download the update for your vRealize Automation appliance from a public repository on the vmware.com Web site.

■

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

Download vRealize Automation Appliance Updates from a VMware Repository

You can download the update for your vRealize Automation appliance from a public repository on the vmware.com Web site.

Prerequisites

"Back Up Your Environment," on page 12

Ensure that your virtual appliance is powered on.

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

"Install the Update on the vRealize Automation Appliance," on page 17

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

■   "Back Up Your Environment," on page 12.

■   All CD-ROM drives you use in your upgrade must be enabled before you update a vRealize Automation 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 the vmware.com Web site.

2   Locate the downloaded file on your system to verify that the file size is the same as the file on vmware.com Web site.

3   Ensure that your virtual appliance is powered on.

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**.

Updating the vRealize Automation Appliance

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After you complete the upgrade prerequisites and download the virtual appliance update, you install updates and reconfigure some settings for the primary vRealize Automation appliance node.

After you upgrade the primary vRealize Automation appliance node, you upgrade the other nodes in your environment in the following order:

1 Each secondary vRealize Automation appliance

2 The IaaS Website with the Microsoft SQL Server

3 IaaS Manager Service

4 IaaS DEM

5 IaaS agent

6 vRealize Orchestrator node

This chapter includes the following topics:

- "Install the Update on the vRealize Automation Appliance," on page 17

- "Install the Update on Additional vRealize Automation Appliances," on page 19

Install the Update on the vRealize Automation Appliance

You install the update on the VMware vRealize ™ Automation appliance and configure appliance settings.

Details regarding the data collected through CEIP and the purposes for which it is used by VMware are set forth at the Trust & Assurance Center at http://www.vmware.com/trustvmware/ceip.html.

Do not close the management console while you install the update.

If you encounter any problems during the upgrade process, see Chapter 8, "Troubleshooting the Upgrade," on page 37.

NOTE While upgrading the Management Agent on the IaaS virtual machines, a VMware public certificate is temporarily installed in your Trusted Publishers certificate store. The Management Agent upgrade process uses a PowerShell script that is signed with this certificate. When the upgrade is finished, this certificate is removed from your certificate store.

Prerequisites

- Select a download method and download the update. See "Downloading vRealize Automation Appliance Updates," on page 13.

- For all high-availability deployments, see "Back Up Your Environment," on page 12.

- For distributed installation deployments with load balancers, verify that you disabled all of the secondary nodes and removed the health monitors for the following items.

    - vRealize Automation appliance

    - IaaS Website

    - IaaS Manager Service

- For deployments with load balancers, verify that the traffic is directed to the primary node.

- Verify that the IaaS service hosted in Microsoft Internet Information Services (IIS) is running by performing the following steps:

    a   Enter the URL **https://*webhostname*/Repository/Data/MetaModel.svc** to verify that the Web Repository is running. If successful, no errors are returned and you see a list of models in XML format.

    b   Check the status recorded in the `Repository.log` file on the Web node of the IaaS virtual machine to see that status reports OK. The file is located in the VCAC home folder at `/Server/Model Manager Web/Logs/Repository.log`.

    > **NOTE** For a distributed IaaS Website, log in to the secondary website, without MMD, and stop Microsoft IIS temporarily. Check the MetaModel.svc connectivity, and restart the Microsoft IIS.

- If you have a Common Components Catalog component installed in your environment, uninstall the component before you upgrade. For information, see the *Common Components Catalog Installation Guide.*

- Verify that all IaaS nodes are in a healthy state by performing the following steps:

    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   Select **vRA settings > Cluster**.

    d   Under **Last Connected** in the table, verify that all IaaS nodes have a last connected time of less than 3 minutes.

    If all the IaaS nodes are not in communication with the vRealize Automation appliance, the upgrade fails.

    e   Note any orphaned nodes listed in the table. An orphaned node is a duplicate node that is reported on the host but does not exist on the host. You must delete all orphaned nodes. For more information, see

- Verify that all saved and in-progress requests have finished successfully before you upgrade.

Procedure

1   Open the vRealize Automation 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.

2   Click the **Services** tab and verify that all services are listed as REGISTERED.

3   Select **Update > Status**.

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

5   (Optional) For instances of vRealize Automation appliance, click **Details** in the Appliance Version area to see information about the location of release notes.

6   Click **Install Updates**.

7   Click **OK**.

    A message stating that the update is in progress appears.

8   (Optional) If you have not resized Disk 1 to 50 GB manually, 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 reboots, log in again to the vRealize Automation appliance management console and select **Update > Status**.

    c   Click **Check Updates** and **Install Updates.**

9   To view the upgrade progress, 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 `updatecli.log` file might display information about the version of vRealize Automation that you are upgrading from. This displayed version changes to the proper version later in the upgrade process.

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

What to do next

Install the Update on Additional vRealize Automation Appliances

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

Do not close the management console while you install the update.

Prerequisites

- Verify that you have downloaded the virtual appliance updates. See "Downloading vRealize Automation Appliance Updates," on page 13.

- If you are upgrading a distributed environment configured with an embedded PostgreSQL database, examine the files in the `pgdata` directory on the master host before you upgrade the replica hosts. Navigate to the PostgreSQL data folder on the master host at `/var/vmware/vpostgres/current/pgdata/`. Close any opened files in the `pgdata` directory and remove any files with a .swp suffix.

Procedure

1   Open the vRealize Automation 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   Click **Settings**.

3   Select to download the updates from a VMware repository or CDROM in the Update Repository section.

4   Click **Status**.

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

6   Click **Install Updates**.

7   Click **OK**.

     A message stating that the update is in progress appears.

8   (Optional) If you have not resized Disk 1 to 50 GB manually, 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 reboots, log in again to the vRealize Automation appliance management console and select **Update > Status**.

     c   Click **Check Updates** and **Install Updates.**

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   When the update is finished, 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   Reboot the virtual appliance.

     a   Click **System**.

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

12   Log in to the vRealize Automation appliance management console.

13   Select **vRA Settings > Cluster**.

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

15   Click **Services** and verify that all of the services are present.

16   Perform the following steps for each tenant directory you create during migration.

     You must complete these steps prior to enabling your virtual appliances in your load balancer.

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

     b   Select **Administration > Directories Management > DIrectories**.

     c   Select your directory name and select **Settings**.

     d   For **Identity Providers**, click the name of your identity provider from the available choices, for example WorkspaceIPD_1.

     e   In the **Connector(s)** drop-down menu, add your additional appliance and enter your BIND DN password.

f   In the **IdP Hostname** text box, change the existing value to your virtual appliance load balancer host name, for example vra-lb-fqdn.vmware.com.

g   Click **Save**.

What to do next

"Download the IaaS Installer," on page 23

Upgrading the IaaS Server Components

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A system administrator upgrades the IaaS server components, including the Microsoft SQL Server database.

You use the IaaS installer to upgrade the Microsoft SQL Server database and configure all systems with installed IaaS components.

If you have a Common Components Catalog component installed, you must uninstall the component before you upgrade. After you finish the upgrade, you can reinstall the component with the appropriate version. For more information, see the *Common Components Catalog Installation Guide*.

This chapter includes the following topics:

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.

NOTE   Except for a passive backup instance of the Manager Service, the startup type for all services must be set to Automatic during the upgrade process. The upgrade process fails if you set services to Manual.

Prerequisites

- Verify that Microsoft .NET Framework 4.5.2 or later is installed on the IaaS installation machine. You can download the .NET installer from the vRealize Automation installer Web page. If you update .NET to 4.5.2 after you shut down the services and the machine restarted as part of the installation, you must manually stop all IaaS services except the Management agent.

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

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

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 primary (master) vRealize Automation appliance node.

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 Automation appliance.

What to do next

"Upgrade the IaaS Components," on page 24

Upgrade the IaaS Components

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

NOTE   The IaaS installer must be on the machine that contains the IaaS components you want to upgrade. You cannot run the installer from an external location.

Verify that snapshots of the IaaS servers in your deployment are available. If the upgrade fails, you can return to the snapshot and attempt another upgrade.

Perform the upgrade so that services are upgraded in the following order:

1   Web sites

If you are using a load balancer, disable traffic to all non-primary nodes.

Finish the upgrade on one server before upgrading the next server that is running a Website service. Start with the one that has the Model Manager Data component installed.

2   Manager services

Upgrade the active manager service before you upgrade the passive manager service.

If you do not have SSL encryption enabled, uncheck the SSL encryption checkbox in the Iaas Upgrade configuration dialog box next to the SQL definition.

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.

5   Management Agent

Is updated automatically as part of the upgrade process.

If you are using different services on one server, the upgrade updates the services in the proper order. For example, if your site has Web site 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 Automation appliance appliances must be disabled for load balancer traffic before you apply the upgrade to avoid caching errors.

Prerequisites

■   "Back Up Your Environment," on page 12.

■   "Download the IaaS Installer," on page 23.

■ Your primary IaaS Website, Microsoft SQL database, and Model Manager node must have Java 8, update 91, 64 bit, `jdk-8u91-windows-x64.exe`, installed. After you install Java, you must set the environment variable, JAVA_HOME , to the new version on each server node.

■ If you have a Common Components Catalog component installed, you must uninstall the component before you upgrade. After you finish the upgrade, you can reinstall the component with the appropriate version. For more information, see the *Common Components Catalog Installation Guide*.

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 Web sites and non-primary Manager Services 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 On the Installation Type page, verify that **Upgrade** is selected.

   If **Upgrade** is not selected, the components on this system are already upgraded to this version.

8 Click **Next**.

9 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 vRealize Automation 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 vRealize Automation Designer becomes the most recent after upgrade, and the most recent version before upgrade becomes the second most recent.
	For information about vRealize Automation Designer, see *Life Cycle 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. Enter a fully qualified domain name (FQDN) for the database server name in the **Database name** text box.
	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.
	When upgrading the manager nodes, the MSSQL SSL option is selected by default. If your database does not use SSL, uncheck **Use SSL for database connection**.

10 Click **Next**.

11 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.

12 Click **Next**.

13 The Complete page appears with this message: VRealize Automation is upgraded on this machine. Click Finish. On an upgraded IaaS Web node that hosts Model Manager, reset IIS. Open a command prompt using Run As Administrator, and enter iisreset. If your machine hosts Model Manager, restart Microsoft IIS as directed before you continue.

14 Click **Finish**.

15 Verify that all services restarted.

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

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.

What to do next

If your deployment uses a load balancer, upgrade each load balancer node to use vRealize Automation 7.1 health checks, and re-enable load balancer traffic for any unconnected nodes. If your previous deployment used a load balanced embedded Postgres, disable all nodes in the Postgres pool because they are not needed for 7.1. Delete the pool at a convenient time.

(Optional) Upgrade the SQL Database Manually

The SQL database is upgraded automatically from the machine where you run the IaaS installer as a necessary part of the upgrade process. If you do not have permissions to update the SQL database using the IaaS installer, contact your database administrator to upgrade the SQL database first using the following procedure.

An administrator can control some aspects of upgrade by using DBUpgrade.exe command line options.

The DBUpgrade command requires the names of the SQL Server database instance and the vRealize Automation database and the port number if you are using a port other than the default SQL port. It can use Windows authentication or SQL authentication to access the database. DBUpgrade.exe creates a log file named dbupgrade.log in the current directory if you do not provide a path name for another directory.

IMPORTANT The `DBUpgrade.exe` command is case-sensitive. Enter the command line options using the case shown in the command options table.

Run this command only once during an upgrade.

If Java 8, update 91, 64 bit is not installed, or if the JAVA_HOME environment is set incorrectly, you see a message similar to the following one:

```
Upgrading VMware vCAC or vCloud Automation Center IaaS SQL database
fails with the error: Java version 1.7(64-bit) must be installed,
the environment variable JAVA_HOME must be set to the Java install folder, and
%JAVA_HOME%\bin\java.exe (2089329)
```

For information about resolving the error, see the VMware Knowledge Base article at http://kb.vmware.com/kb/2089329.

Prerequisites

- Verify that the machine on which you run the `DBUpgrade` command meets the following Java-related requirements.

  - Java 8, update 91, 64 bit, `jdk-8u91-windows-x64.exe`, is installed. 32-bit versions are not supported.

    For the latest version information, see the *vRealize Automation Support Matrix* at https://www.vmware.com/support/pubs/vcac-pubs.html.

  - The environment variable JAVA_HOME is set to the Java install folder.

  - The `%JAVA_HOME%\bin\java.exe` file is available.

Procedure

1 Navigate to the Windows installer download page by using https://*vcac-va-hostname.domain.name*:5480/installer/, the host name of the vRealize Automation appliance.

2 Click **database upgrade scripts** from the list of options under IaaS Installation.

3 Extract the contents of the `DBUpgrade.zip` archive file to a local folder on the vRealize Automation database host, or to another location with network access to the database host.

4 In an elevated Windows command prompt window, set your current directory to the folder where you extracted the contents of the `DBUpgrade.zip` archive file.

5 Enter a `DBUpgrade` command string in the following format, recognizing that the command options are case-sensitive.

```
DBUpgrade [-S dbserver[,port number][\SQLinstance]] [-d dbname] [-N] [{-E | -U username}] [-l logfilepath]
```

Option	Description
-S dbserver [,portnumber] [\SQLinstance]	Identifies the database server instance by server name, port number and SQL instance name.
	Allowable values for *dbserver* are **localhost** or a fully qualified domain name for the database server.
	If you are using an SQL port number other than the default, 1433, you must specify the port number as part of the FQDN. If no port number is specified, the 1433 port is used.
	If you are using a named SQL instance, specify the instance name. If no name is specified, the default, unnamed SQL instance is used.
-d dbname	Identifies the vRealize Automation database *dbname*.

Option	Description
-N	Specifies that a secure database connection be used. If your SQL server is configured to accept a secure connection, you can use this option to upgrade the database.
-E	Requires a Windows Authentication trusted connection to access the database and connects using the Windows credentials of the user who is running the command.
-U *username*	Specifies the user name for the database owner account.
-l *logfilepath*	Specifies the full pathname of the upgrade log file. By default, the command creates the `dbupgrade.log` log file in the current directory.

6   (Optional) At the prompt, enter the password for the database owner account.

You are prompted for this information only when you specify a username with the -U *username* argument to the `DBUpgrade` command.

The command upgrades the database to the latest release.

Example: DBUpgrade.exe

The following examples illustrate uses of command syntax.

■ `DBUpgrade`

With no options, displays usage information.

■ `DBUpgrade —S localhost     —d VCAC —E`

Upgrades the VCAC database in the default, unnamed SQL instance running on the local host on the default port 1433 and connects using your Windows credentials over a Windows Authentication trusted connection.

■ `DBUpgrade —S dbhost.mydomain.local,5555 —d VCAC —E`

Upgrades the VCAC database in the default, unnamed SQL instance running on dbhost on the non-default port 5555 and connects using your Windows credentials over a Windows Authentication trusted connection.

■ `DBUpgrade —S dbhost.mydomain.local\MySQLinstance —d VCAC —U SqlUser —l    %SystemDrive %\VCACDBUpgrade\Log_30Apr.log`

Logs in as the user named SqlUser and prompts you for the password for the SqlUser account. Then, upgrades the VCAC database in the named instance MySQLinstance running on dbhost on the default port, and creates the `Log_30Apr.log` upgrade log file in the VCACDBUpgrade folder on the system drive.

■ `DBUpgrade —S dbhost.mydomain.local,5555\MySQLinstance —d VCAC —E —l %SystemDrive %\VCACDBUpgrade\Log_30Apr.log`

Upgrades the database VCAC in the named instance MySQLinstance running on dbhost and the non-default port 5555, logs in using your Windows credentials over a Windows Authentication trusted connection, and creates the `Log_30Apr.log` upgrade log file in the VCACDBUpgrade folder on the system drive.

Add Users or Groups to an Active Directory Connection

5

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 > Directories Management > Directories**

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 6

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

7

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

This chapter includes the following topics:

Rejoin Replica to Cluster

After you upgrade a clustered environment, you must manually rejoin each replica node.

Access the management console for each replica node and perform the following steps.

Prerequisites

You upgrade on all the nodes in a clustered environment.

Procedure

1   Select **vRA Settings > Cluster**.

2   Click **Join Cluster**.

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 Automation appliance to support remote console features.

For more information, see the *vRealize Automation Load Balancing Configuration Guide* in the vRealize Automation information center.

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.

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

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 xmldb files.

Procedure

1   Open the external workflow configuration (xmldb) files on your system from the following directory.

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

2   Reconfigure the external workflow timeout settings.

3   Save your settings.

Verify That vRealize Orchestrator Service Is Available

After you upgrade to VMware vRealize ™ Automation 7.1, you must verify the connection between vRealize Automation and VMware vRealize ™ Orchestrator ™. Sometimes after upgrade you must restore the connection.

Prerequisites

Log in to the vRealize Orchestrator configuration interface.

Procedure

1   Click **Validate Configuration**.

2   If the Authentication section has a green check, go to step 4.

3   If the Authentication section does not have a green check, perform the following steps to restore the connection to vRealize Orchestrator .

    a   Click **Home**.

    b   Click **Configure Authentication Provider**.

    c   In the **Admin group** text box, select **Change**, and choose a new Admin group that can be properly resolved.

        The vcoadmins group is available only at the default vsphere.local tenant. If you are using another tenant for the vRealize Orchestrator, then you must select another group.

    d   Click **Save Changes**, and if prompted, restart the vRealize Orchestrator server.

    e   Click **Home**.

4   Repeat step 1 to confirm that the Authentication section still has a green check.

5   Click **Home**, and close the vRealize Orchestrator Control Center.

Restore Changes to Logging in the app.config File

The upgrade process overwrites changes you make to logging in the configuration files. After you finish an upgrade, you must restore any changes you made before the upgrade to the `app.config` file .

Update Access Policy

You must configure the upgrade to make sure that user sessions are limited to 30 minutes.

Preform this procedure on each vRealize Automation appliance.

Prerequisites

You have completed all of the previous upgrade tasks.

Procedure

1   Open a new command prompt as root user on the vRealize Automation appliance.

2   At the command prompt, enter `/usr/lib/vcac/tools/vami/commands/horizon-update-access-policy`.

3   Press Enter.

Troubleshooting the Upgrade 8

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

This chapter includes the following topics:

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.

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.

Catalog Items Appear in the Service Catalog But Are Not Available to Request

Catalog items that use certain property definitions from prior versions appear in the service catalog but are not available to request after upgrading to vRealize Automation 7.1.

Problem

If you upgraded from a 6.2.x or earlier version and you had property definitions with the following control types or attributes, the attributes are missing from the property definitions and any catalog items that use the definitions do not function the way that they did before you performed the upgrade.

- Control types. Check box or link.

- Attributes. Relationship, regular expressions, or property layouts.

Cause

Beginning in vRealize Automation 7.0, the property definitions no longer use the attributes. You must recreate the property definition or configure the property definition to use avRealize Orchestrator script action rather than the embedded control types or attributes.

In vRealize Automation 7.0 and later, the property definitions no longer use the attributes. You must recreate the property definition or configure the property definition to use a vRealize Orchestrator script action rather than the embedded control types or attributes.

Migrate the control type or attributes to vRealize Automation 7.0 using a script action.

Solution

1   In vRealize Orchestrator, create a script action that returns the property values. The action must return a simple type. For example, return strings, integers, or other supported types. The action can take the other properties on which it depends as an input parameter.

2   In vRealize Automation console, configure the product definition.

   a   Select **Administration > Property Dictionary > Property Definitions**.

   b   Select the property definition and click **Edit**.

   c   From the Display advice drop-down menu, select **Dropdown**.

   d   From the Values drop-down menu, select **External Values**.

   e   Select the script action.

   f   Click **OK**.

g   Configure the Input Parameters that are included in the script action. To preserve the existing relationship, bind the parameter to the other property.

h   Click **OK**.

Unable to Upgrade Management Agent

An error message about the Management Agent appears when you click **Install Updates** on the VMware vRealize ™ Automation management console Update Status page.

Problem

Upgrade process is unsuccessful. Message appears: Unable to upgrade management agent on node x. Sometimes the message lists more than one node.

Cause

Many conditions can cause this problem. The error message only identifies the node ID of the affected machine. More information is found in the `All.log` file for the Management Agent on the machine where the command failed.

Solution

1   Download the latest version of the Management Agent from https://*va-hostname.domain.name*: 5480/install.

2   Upgrade the Management Agent manually on the affected machine.

IaaS Windows Services Fail to Stop

An error message about Windows services appears when you click **Install Updates** on the VMware vRealize ™ Automation management console Update Status page.

Problem

Upgrade process appears to be unsuccessful. Message appears: Failed to stop service *service name*.

Cause

The IaaS Manager Service does not stop because the Windows service stop process times out. Because a running IaaS Manager Service does not block the upgrade, the message can be safely ignored.

PostgreSQL External Database Merge Is Unsuccessful

The external PostgreSQL database merge with the embedded PostgreSQL database does not succeed.

Problem

If the external PostgreSQL database version is later than the embedded PostgreSQL database version, the merge does not succeed.

Solution

1   Log in to the host for the PostgreSQL external database.

2   Run the `psql --version` command.

Note the PostgreSQL version for the external database.

3   Log in to the host for the PostgreSQL embedded database.

4   Run the `psql --version` command.

Note the PostgreSQL version for the embedded database.

If the external PostgreSQL version is later than the embedded PostgreSQL version, contact support for assistance to merge your external PostgreSQL database.

Delete Orphaned Nodes on vRealize Automation 7.0

An orphaned node is a duplicate node that is reported on the host but does not exist on the host.

Problem

When you verify that all IaaS nodes are in a healthy state, you might discover that a host has one or more orphaned nodes. You must delete all orphaned nodes.

Solution

1   Log in with a secure shell connection to the virtual appliance host and run `vcac-config cluster-config-node --action list`.

    This command returns a list of nodes with their IDs in JSON format where nodeId is the ID of the node and nodeHost is the host name of the node.

2   Run `vcac-config cluster-config-node --action delete --id ID of the node to delete`.

    This command deletes the identified orphaned node.

Delete Orphaned Nodes on vRealize Automation 7.0.1

An orphaned node is a duplicate node that is reported on the host but does not exist on the host.

Problem

When you verify that all IaaS nodes are in a healthy state, you might discover that a host has one or more orphaned nodes. You must delete all orphaned nodes.

Solution

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 entered when the appliance was deployed.

3   Select **vRA settings > Cluster**.

4   For each orphaned node in the table, click **Delete**.

Join Cluster Command Appears to Fail After Upgrading a High-Availability Environment

After you click **Join Cluster** in the management console on a secondary cluster node, the progress indicator disappears.

Problem

When you use the vRealize Automation appliance management console after upgrade to join a secondary cluster node to the primary node, the progress indicator disappears and no error or success message appears. This behavior is an intermittent problem.

Cause

The progress indicator disappears because some browsers stop waiting for a response from the server. This behavior does not stop the join cluster process. You can confirm that the join cluster process is successful by viewing the log file at `/var/log/vmware/vcac/vcac-config.log`.

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 3 GB.

Manual PostgreSQL Database Merge

The external PostgreSQL database merge with the embedded PostgreSQL database does not succeed.

Problem

If the PostgreSQL database upgrade merge does not succeed, you can perform a manual merge.

Solution

1   Revert the vRealize Automation virtual appliance to the snapshot you made before upgrade.

2   Log in to the vRealize Automation virtual appliance and run this command to allow upgrade to complete if the database merge does not succeed.

```
touch /tmp/allow-external-db
```

The command does not disable auto merge.

3   On the remote PostgreSQL database host, connect to the PostgreSQL database using the psql tool and run these commands.

```
CREATE EXTENSION IF NOT EXISTS "hstore";
```

```
CREATE EXTENSION IF NOT EXISTS "uuid-ossp";
```

```
CREATE SCHEMA saas AUTHORIZATION vcac;
```

The user in this command is vcac. If vRealize Automation connects to the external database with a different user, replace vcac in this command with the name of that user.

```
CREATE EXTENSION IF NOT EXISTS "citext" SCHEMA saas;
```

4   Run upgrade.

If upgrade is successful, the system works as expected with the external PostgreSQL database. Ensure that the external PostgreSQL database is running properly.

5   Log in to the vRealize Automation virtual appliance and run these commands

```
/etc/bootstrap/postupdate.d/00-20-db-merge-external
```

```
/etc/bootstrap/postupdate.d/11-db-merge-external
```

Management Agent Upgrade is Unsuccessful

The Management Agent upgrade is unsuccessful while upgrading from vRealize Automation 7.0 or 7.0.1 to 7.1.

Problem

If a failover incident has switched the primary and secondary Management Agent host, the upgrade is unsuccessful because the automated upgrade process cannot find the expected host. Perform this procedure on each IaaS node where the Management Agent is not upgraded.

Solution

1   Open the All.log in the Management Agent logs folder, which is located at `C:\Program Files (x86)\VMware\vCAC\Management Agent\Logs\`.

    The location of the installation folder might be different from the default location.

2   Search the log file for a message about an outdated or powered off virtual appliance.

    For example, `INNER EXCEPTION: System.Net.WebException: Unable to connect to the remote server ---> System.Net.Sockets.SocketException: A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond IP_Address:5480`

3   Edit the Management Agent configuration file at `C:\Program Files (x86)\VMware\vCAC\Management Agent\VMware.IaaS.Management.Agent.exe.config` to replace the existing alternativeEndpointaddress value with the URL of the primary virtual appliance endpoint.

    The location of the installation folder might be different from the default location.

    Example of alternativeEndpointaddress in `VMware.IaaS.Management.Agent.exe.config`.

    `<alternativeEndpoint address="https://FQDN:5480/" thumbprint="thumbprint number" />`

4   Restart the Management Agent Windows service and check the `All.log` file to verify that is working.

5   Run the upgrade procedure on the primary vRealize Automation appliance.

Upgrade Fails to Upgrade the Management Agent or Certificate Not Installed on a IaaS Node

Management Agent or Certificate is not upgraded on a IaaS node and error message appears in the management console.

Problem

If the upgrade fails to upgrade on a IaaS node and error messages about the Management Agent or Certificate appear in the management console, use these suggestions to troubleshoot the problem.

■   Check the Management Agent log on the affected node for errors.

■   Check if the Management Agent was auto-upgraded by examining the version number in Programs and Features.

■   If the Management Agent is upgraded, ensure that its service is running.

■   If the Management Agent is upgraded and running, restart upgrade on the virtual appliance.

■   If the Management Agent is not upgraded, perform a manual upgrade of the Management Agent. Open a browser and navigate to the VMware vRealize Automation IaaS Installation page on the vRealize Automation appliance at https://*virtual_appliance_host*:5480/installer. Download and run the Management Agent Installer. Restart upgrade on the virtual appliance.

Bad PostgreSQL Service State Stops Upgrade and Displays Error Message

The postupgrade scripts cause an intermittent problem when vpostgres service returns incorrect status.

Problem

When the vpostgres service reports being in a bad state, upgrade fails at the /etc/bootstrap/postupdate.d/10-postgres postupgrade script. When your upgrade fails on `/etc/bootstrap/preupdate.d/10-postgres script` execution, run these three scripts, one at a time, in the following order, and restart upgrade.

(1)

```
rm -rf /storage/db/psql-upgrade
```

(2)

```
cat > /etc/bootstrap/preupdate.d/00-00-00-fix-psql-restart << "EOF"
   #!/bin/sh

   cat >> /usr/lib/vmware-bootstrap-vrva-base/psql.inc << "EOF"

   function psql_restart () {
      echo 'Restarting PostgreSQL server..'
      service ${psql_service} stop > /dev/null
      service ${psql_service} start
      echo 'restart_psql finished'
   }
  EOF
```

(3)

```
chmod 700 /etc/bootstrap/preupdate.d/00-00-00-fix-psql-restart
```

Backup Copies of .xml Files Cause the System to Time Out

vRealize Automation registers any file with an .xml extension in the \VMware\vCAC\Server\ExternalWorkflows\xmldb\ directory. If this directory contains backup files with an .xml extension, the system runs duplicate workflows that cause the system to time out.

Solution

Workaround: When you back up files in this directory, move the backups to another directory, or change the extension of the backup file name to something other than .xml.

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