

Upgrading from vRealize Automation 7.0 to 7.0.1

vRealize Automation 7.0



vmware®

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

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

If you have comments about this documentation, submit your feedback to

docfeedback@vmware.com

VMware, Inc.
3401 Hillview Ave.
Palo Alto, CA 94304
www.vmware.com

Copyright © 2008–2018 VMware, Inc. All rights reserved. [Copyright and trademark information.](#)

Contents

- Updated Information 5
- 1 Upgrading vRealize Automation 6**
 - Checklist for Upgrading vRealize Automation Components 7
 - Prerequisites for Upgrading vRealize Automation 8
- 2 Preparing to Upgrade vRealize Automation 11**
 - Backing up and Saving Your Existing Environment 11
 - Shut Down vCloud Automation Center Services on Your IaaS Windows Server 13
 - Increase vCenter Server Hardware Resources for Upgrade 14
 - Reconfigure Disk 1 on All vRealize Automation Appliance Nodes 14
 - Downloading vRealize Automation Appliance Updates 16
- 3 Updating the vRealize Automation Appliance 18**
 - Install the Update on the vRealize Automation Appliance 18
 - Install the Update on Additional vRealize Automation Appliances 19
- 4 Upgrading the IaaS Server Components 22**
 - Download the IaaS Installer 22
 - Upgrade the IaaS Components 23
- 5 Add Users or Groups to an Active Directory Connection 27**
- 6 Enable Your Load Balancers 29**
- 7 Post-Upgrade Tasks for vRealize Automation 30**
 - Port Configuration for High-Availability Deployments 30
 - Enabling the Connect to Remote Console Action for Consumers 30
 - Reconfigure External Workflow Timeouts 31
 - Verify That vRealize Orchestrator Service is Available 31
 - Restore Embedded vRealize Orchestrator Endpoint 32
 - Configure an External PostgreSQL Database to Merge into an Embedded PostgreSQL Environment 32
 - Ensure Deployed Virtual Machines Register With Software Service 33
 - Restore Changes to Logging 34
- 8 Troubleshooting the Upgrade 35**
 - Installation or Upgrade Fails with a Load Balancer Timeout Error 35

Upgrade Fails for Website Component During IaaS Upgrade	36
Incorrect Tab Names Appear Intermittently	36
Manager Service Fails to Run Due to SSL Validation Errors During Runtime	36
Log In Fails After Upgrade	37
Catalog Items Appear in the Service Catalog But Are Not Available to Request	37

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 this *Upgrading vRealize Automation* guide.

Revision	Description
EN-002047-02	<ul style="list-style-type: none">■ Updated Configure an External PostgreSQL Database to Merge into an Embedded PostgreSQL Environment to revise previous commands.■ Added Ensure Deployed Virtual Machines Register With Software Service to address a reported problem.
EN-002047-01	<p>Updated topics to address reported problems.</p> <ul style="list-style-type: none">■ Updated Reconfigure Disk 1 on All vRealize Automation Appliance Nodes to provide warning about not restarting the system prematurely.■ Updated Install the Update on Additional vRealize Automation Appliances to add additional steps to the end of the procedure.■ Updated Downloading vRealize Automation Appliance Updates to remove the second method of downloading updates.■ Updated Configure an External PostgreSQL Database to Merge into an Embedded PostgreSQL Environment to add additional commands.■ Updated Install the Update on the vRealize Automation Appliance to add prerequisite about running the required script described in Knowledge Base 2144876.
EN-002047-00	Initial release.

Upgrading vRealize Automation

Upgrading is a multi-stage 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 vRealize Automation features and innovations introduced in 7.0 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.

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>.

You can upgrade to vRealize Automation 7.0.1 from any supported vRealize Automation 6.2.x or vRealize Automation 7.0 release.

Table 1-1. Supported Upgrade Paths to 7.0.1

Your Currently Installed Version	Documentation for Incremental Upgrades
vRealize Automation 7.0	Upgrade to the 7.0.1 release as described in Upgrading from vRealize Automation 7.0 to 7.0.1 .
vRealize Automation 6.2.0, 6.2.1, 6.2.2, 6.2.3, and 6.2.4	Upgrade directly to the 7.0.1 release as described in Upgrade from vRealize Automation 6.2 to 7.0.1 .

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](#)
- [Prerequisites for Upgrading vRealize Automation](#)

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
<input type="checkbox"/> 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 . For general information, see <i>Configuring Backup and Restore by Using Symantec Netbackup at</i> http://www.vmware.com/pdf/vrealize-backup-and-restore-netbackup.pdf
<input type="checkbox"/> Shut down vRealize Automation Windows services on your IaaS server.	See Shut Down vCloud Automation Center Services on Your IaaS Windows Server .
<input type="checkbox"/> If the Common Components Catalog is installed, you must uninstall it before you upgrade.	For information about how to uninstall, install, and upgrade the Common Components Catalog, see the Common Components Catalog documentation.
<input type="checkbox"/> Configure your hardware resources.	See Increase vCenter Server Hardware Resources for Upgrade .
<input type="checkbox"/> Download updates to the vRealize Automation appliance.	See Downloading vRealize Automation Appliance Updates .
<input type="checkbox"/> Install the update on the vRealize Automation appliance.	See Install the Update on the vRealize Automation Appliance .
<input type="checkbox"/> Download and install updates for IaaS.	See Chapter 4 Upgrading the IaaS Server Components .

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

Task	Instructions
<input type="checkbox"/> 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 . For detailed information, see <i>Configuring Backup and Restore by Using Symantec Netbackup</i> at http://www.vmware.com/pdf/vrealize-backup-and-restore-netbackup.pdf
<input type="checkbox"/> Shut down vRealize Automation services on your IaaS Windows server.	See Shut Down vCloud Automation Center Services on Your IaaS Windows Server .
<input type="checkbox"/> If the Common Components Catalog is installed, you must uninstall it before you upgrade.	For information about how to uninstall, install, and upgrade the Common Components Catalog, see the Common Components Catalog documentation.
<input type="checkbox"/> Configure your hardware resources for the upgrade.	See Increase vCenter Server Hardware Resources for Upgrade .
<input type="checkbox"/> Download updates to the vRealize Automation appliance.	See Downloading vRealize Automation Appliance Updates .
<input type="checkbox"/> 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 .
<input type="checkbox"/> Install the update on the rest of your vRealize Automation appliances.	Install the Update on Additional vRealize Automation Appliances
<input type="checkbox"/> Download and install updates for IaaS.	See Chapter 4 Upgrading the IaaS Server Components .
<input type="checkbox"/> Enable your load balancers.	Chapter 6 Enable Your Load Balancers

Prerequisites for Upgrading vRealize Automation

Before you run the upgrade, review the 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 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>.
- 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 issues before upgrading.

- Record your vCloud Suite license key if you used it for your the vRealize Automation installation you are upgrading from. Upon upgrade, existing license keys are removed from the database.

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.
- To avoid upgrade failures due to insufficient free space in future vRealize Automation upgrades, Disk 1 must be re-sized to 50 GB on all vRealize Automation appliances. See "Re-size Disk 1 for Upgrade" on page 19.
- Your CPU must have four virtual sockets and one core. See [Increase vCenter Server Hardware Resources for Upgrade](#).
- Your IaaS Server nodes must have the Microsoft .NET Framework 4.5.2 version and at least 5 GB of free disk space.
- You must have at least 7 GB of free disk space on each vRealize Automation appliance of the root partition to download and run the upgrade.
- Check the /storage/log subfolder and remove any older archived zip files to cleanup space.

General Prerequisites

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

- You have access to an Active Directory account that has a username@domain format with permissions to bind to the directory.
- You have access to an account that has a SAMaccountName format with 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 have disabled any applications that query vRealize Automation.
- You have followed the instructions in [Shut Down vCloud Automation Center Services on Your IaaS Windows Server](#).
- 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 the Common Components Catalog is installed, you must uninstall it before you upgrade. For information about how to uninstall, install, and upgrade the Common Components Catalog, see the Common Components Catalog documentation.

Preparing to Upgrade vRealize Automation

2

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](#).

This chapter includes the following topics:

- [Backing up and Saving Your Existing Environment](#)
- [Shut Down vCloud Automation Center Services on Your IaaS Windows Server](#)
- [Increase vCenter Server Hardware Resources for Upgrade](#)
- [Reconfigure Disk 1 on All vRealize Automation Appliance Nodes](#)
- [Downloading vRealize Automation 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 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 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

- As of vRealize Automation 7.0, the PostgreSQL database is always configured in high-availability mode. Log in to the management console and navigate to **vRA settings > Database** to locate the current master node.
- 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, take an in-memory snapshot of all the nodes.

- Verify that you have a backup of 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 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 Extend Disk 1 to 50 GB for each vRealize Automation appliance. 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 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](#)

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 Servers,

Shut down vCloud Automation Center services in the recommended order for all servers that are running IaaS services.

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.

Procedure

- 1 Log in to your IaaS Windows Server.
- 2 Select **Start > Administrative Tools > Services**.
- 3 Shut down services in the following order. Be sure not to shut down the actual machine.
Each virtual machine has a Management agent, which should be stopped with each set of services.
 - a All VMware vCloud Automation Center agents
 - b All VMware DEM workers
 - c VMware DEM orchestrator
 - d VMware vCloud Automation Center Service
- 4 For deployments that use load balancers, disable all of the secondary nodes from the load balancer for the distributed installation.
- 5 For deployments that use load balancers, disable all vRealize Automation health monitors, and ensure traffic is directed to the primary node.
- 6 Verify that the IaaS service hosted in Microsoft Internet Information Services 7.5 is running.
 - 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.
 - Check the status recorded in the Repository.log file on the Web node of the IaaS machine. The file is located in the VCAC home folder at /Server/Model Manager Web/Logs/Repository.log to see that status reports OK.

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 Automation appliance.

If you have taken snapshots of your vRealize Automation appliances, you must clone your appliances and increase the hardware resources on the clones. Ensure that you have at least 60 GB of free space for each appliance in your vCenter. After you clone your appliances, power down the original appliances before you perform this procedure.

These steps are based on the Windows client.

Procedure

- 1 Log in to vCenter Server.
- 2 Select the vRealize Automation appliance and click **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](#).

Reconfigure Disk 1 on All vRealize Automation Appliance Nodes

You must reconfigure Disk 1 on the vRealize Automation version you are upgrading from before beginning the upgrade.

Perform this procedure for each replica appliance node sequentially, and then for 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 this message: You should reboot now before making further changes. If you reboot your system before step 10, you will corrupt the upgrade process.

Procedure

- 1 Power on and SSH login to the vRealize Automation appliance.
- 2 Stop all vRealize Automation 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
```

Note 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](#)

Downloading vRealize Automation Appliance Updates

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

- [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.

- [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 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](#)

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](#)

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](#).
- 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

3

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

After you upgrade the first vRealize Automation appliance node, upgrade the primary IaaS Windows server, vRealize Orchestrator, the secondary vRealize Automation appliance nodes, and the secondary IaaS Windows servers.

This chapter includes the following topics:

- [Install the Update on the vRealize Automation Appliance](#)
- [Install the Update on Additional vRealize Automation Appliances](#)

Install the Update on the vRealize Automation Appliance

You install the update on the 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 the update is being installed.

Prerequisites

- Select a download method and download the update. See [Downloading vRealize Automation Appliance Updates](#).
- For all high-availability deployments, see [Back Up Your Environment](#).
- For high-availability deployments with load balancers, verify that the health check is disabled on all load balancers.
- If you have a Common Components Catalog component installed, uninstall the component before you upgrade. For information about how to uninstall, install, and upgrade the Common Components Catalog, see the Common Components Catalog documentation.
- Verify that all saved and in-progress requests have completed successfully before you upgrade.
- (Upgrading from vRealize Automation 7.0 to 7.0.1 only) Verify that you have run the required script described in Knowledge Base 2144876.
- Verify that the Message Signature Check value is disabled. See [Chapter 1 Upgrading vRealize Automation](#).

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 **Services** tab and verify that all services except `iaas-service` are listed as REGISTERED.

At least one vco service should be registered. If other vco services are not registered, leave them as is.

- d Click the **Update** tab.
- 2 Click **Status**.
- 3 Click **Check Updates** to verify that an update is accessible.
- 4 (Optional) For instances of vRealize Automation appliance, click **Details** in the Appliance Version area to see information about the location of release notes.

- 5 Click **Install Updates**.

- 6 Click **OK**.

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

`/opt/vmware/var/log/vami/updatecli.log`, `/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. The `update.cli.log` file might display information about the version of vRealize Automation that you are upgrading from. Ignore this file. It is changed later in the upgrade process.

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

What to do next

[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 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 the update is being installed.

Prerequisites

- Verify that you have downloaded the virtual appliance updates. See [Downloading vRealize Automation Appliance Updates](#).

Procedure

- 1 Locate the secondary vRealize Automation appliance node and power it on.
- 2 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.
- 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 Reboot the virtual appliance.
 - a Click the **System** tab.
 - b Click **Reboot** and confirm your selection.
- 12 Log in to the vRealize Automation appliance.
- 13 Select **vRA Settings > Cluster**.
- 14 Verify that all of the services appear under the **Service** tab.

15 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 appliance management console as **tenant administrator**.
- b Select **Administration > Directories**.
- c Select your directory name and select **Identity Provider**.
- d Click the name of your identity provider from the available choices, for example WorkspaceIPD_1.
- e In the **Connector** 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 vcacva701.sqa.local.
- g Click **Save**.

What to do next

[Download the IaaS Installer](#)

Upgrading the IaaS Server Components

4

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

You use the IaaS installer to upgrade the SQL 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](#)
- [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 4.5.2 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 again stop the services. For more information, see [Shut Down vCloud Automation Center Services on Your IaaS Windows Server](#).
- 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.

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 **laaS 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 laaS Components](#)

Upgrade the laaS Components

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

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

If you do not have permissions to update the SQL database, contact your database administrator to upgrade the SQL database first using the database upgrade scripts provided on the Web console installer download page. For more information, see *Upgrade the Database in Upgrading to vRealize Automation 6.2.x*.

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

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 laaS 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.](#)
- [Shut Down vCloud Automation Center Services on Your IaaS Windows Server.](#)
- [Download the IaaS Installer.](#)
- Check whether you have run the Prerequisite Checker to verify that the Windows servers for IaaS components are correctly configured.

If you run the Prerequisite Checker and you need to reboot your system, you must shut down the vRealize Automation services on your IaaS Windows server. See [Shut Down vCloud Automation Center Services on Your IaaS Windows Server.](#)

- If the Common Components Catalog is installed, you must uninstall it before you upgrade. For information about how to uninstall, install, and upgrade the Common Components Catalog, see the Common Components Catalog documentation.

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 <i>Life Cycle Extensibility</i> .
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 Click **Finish**.

- 14 Verify that all services restarted.

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

- 16 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 7.0.1 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 7.0.1. Delete the pool at a convenient time. For more information, see .

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.

6

Enable Your Load Balancers

If your deployment uses load balancers, enable them for the installation according to documentation from your 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:

- [Port Configuration for High-Availability Deployments](#)
- [Enabling the Connect to Remote Console Action for Consumers](#)
- [Reconfigure External Workflow Timeouts](#)
- [Verify That vRealize Orchestrator Service is Available](#)
- [Restore Embedded vRealize Orchestrator Endpoint](#)
- [Configure an External PostgreSQL Database to Merge into an Embedded PostgreSQL Environment](#)
- [Ensure Deployed Virtual Machines Register With Software Service](#)
- [Restore Changes to Logging](#)

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 vRealize Automation 7.0, you must verify that the connection between vRealize Automation and vRealize Orchestrator is working. Sometimes the upgrade process makes it necessary to restore the connection.

Prerequisites

Log in to the vCenter Orchestrator configuration interface.

Procedure

- 1 Click **Validate Configuration**.
- 2 If the Authentication section has a green check, go to step 5.
- 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 specify a new Admin group that can be properly resolved.

Note 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 choose another group.

 - d Click **Save Changes**, and if prompted, restart the Orchestrator server.
 - e Click **Home**.
- 4
- 5 Repeat step 1 to validate that the Authentication section has a green check.
- 6 Click **Home**, and close the vRealize Orchestrator Control Center.

Restore Embedded vRealize Orchestrator Endpoint

If you add an embedded vRealize Orchestrator endpoint to a vRealize Automation 6.x deployment and upgrade to vRealize Automation 7.0, you must make changes to the vRealize Orchestrator endpoint URL to restore the connection.

In vRealize Automation 6.x, the URL for the embedded vRealize Orchestrator is `https://hostname:8281/vco`. In vRealize Automation 7.0, the URL for an embedded vRealize Orchestrator changes to `https://hostname/vco`. Because the 6.x URL does not change when you upgrade to 7.0, the system cannot find vRealize Orchestrator. Perform the following steps to fix this problem.

Prerequisites

- Log in to the vRealize Automation console as an **laaS administrator**.

Procedure

- 1 Select **Infrastructure > Endpoints > Endpoints**.
- 2 On the Endpoints page, point to the vRealize Orchestrator endpoint, and select **Edit** from the context menu.
- 3 In the Address text box, edit the vRealize Orchestrator endpoint URL to remove `:8281`.
- 4 Click **OK**.
- 5 Manually start data collection on the vRealize Orchestrator, and verify that the collection is successful.

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

After you upgrade the master node in the vRealize Automation 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 Automation appliance is upgraded.

Procedure

- 1 Select your master vRealize Automation appliance as described in the knowledge base article at <http://kb.vmware.com/kb/2105809>.
- 2 Use SSH to log in to the primary virtual appliance.

- 3 Navigate to the `/etc/vcac/server.xml` file and make the following changes so that the PostgreSQL database connection specifies the external IP address of the master PostgreSQL node. Change the URL attribute from `url=jdbc:postgresql://EXT_DB_FQDN:EXT_DB_PORT/EXT_DB_NAME?sslmode=require` to `url=jdbc:postgresql://EXT_DB_IP:EXT_DB_PORT/EXT_DB_NAME`.

- `EXT_DB_FQDN` is the Fully Qualified Domain Name of the external vRealize Automation database.
- `EXT_DB_PORT` is the external database port number.
- `EXT_DB_IP` is the IP address of the external vRealize Automation database master node.
- `EXT_DB_NAME` is the vRealize Automation external database name.

Be sure to remove `?sslmode=require`.

- 4 Open a command-line prompt and run the following command to check the vPostgreSQL service status.

```
service vpostgres status
```

If the service is stopped, run the `service vpostgres start` command.

- 5 Run the merge command.

```
vcac-vami db-merge-external
```

- 6 Run the following commands consecutively to enable the embedded PostgreSQL on both nodes.

```
chkconfig vpostgres on
```

```
service vpostgres start
```

- 7 Reboot the primary virtual appliance.
- 8 Wait for the primary virtual appliance to start.
- 9 Verify that all of the services are running with the exception of the `laaS-service`, which should appear as `REGISTERED`.

Ensure Deployed Virtual Machines Register With Software Service

Run the following commands to ensure that deployed virtual machines register with software services.

Prerequisites

You must have administrator privileges on the virtual appliance host machine.

Procedure

- ◆ Open a new command prompt on the virtual appliance host machine and run the following commands.

```
openssl pkcs12 -export -name rabbitmq_ca -in /etc/rabbitmq/certs/ca/cacert.pem -
inkey /etc/rabbitmq/certs/ca/private/cakey.pem -out /tmp/rabbitmq_keystore.p12 -
password pass:password keytool -importkeystore -
destkeystore /etc/vcac/vcac.keystore -deststorepass password -
srckeystore /tmp/rabbitmq_keystore.p12 -srcstoretype pkcs12 -srcstorepass
password -alias rabbitmq_ca grep -q
certificate.store.ssl.rabbit.ca.alias=rabbitmq_ca /etc/vcac/security.properties
|| echo 'certificate.store.ssl.rabbit.ca.alias=rabbitmq_ca'
>> /etc/vcac/security.properties
```

Restore Changes to Logging

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 to the `app.config` file before the upgrade.

Troubleshooting the Upgrade

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

This chapter includes the following topics:

- [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](#)
- [Catalog Items Appear in the Service Catalog But Are Not Available to Request](#)

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 an upgrade to vRealize Automation 7.0.1, unsynchronized user accounts are denied access 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 7.0.1.

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 upgrading .

- ■ 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 a vRealize 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. For information about creating script actions, see the [vRealize Orchestrator documentation](#).
- 2 In vRealize Automation, configure the product definition.
 - a. b. Select the property definition and click **Edit**.
 - c. From the 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**.