

# Upgrading from vRealize Automation 6.2.5 to 7.3 or 7.3.1

15 March 2018

vRealize Automation 7.3



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# Updated Information

This *Upgrading from vRealize Automation 6.2.5 to 7.3* is updated with each release of the product or when necessary.

This table provides the update history of *Upgrading from vRealize Automation 6.2.5 to 7.3*.

Revision	Description
18 JAN 2018	<ul style="list-style-type: none"><li>Revised <a href="#">Installing or Upgrading vRealize Automation Fails</a>.</li><li>Added <a href="#">After Rebooting the Virtual Appliance, Automatic IaaS Upgrade Fails and Displays Pending Reboot Error</a>.</li></ul>
04 DEC 2017	<ul style="list-style-type: none"><li>Revised <a href="#">Prerequisites for Upgrading vRealize Automation</a>.</li><li>Revised <a href="#">Checklist for Upgrading vRealize Automation</a>.</li><li>Added <a href="#">Empty Deployments Are Seen in vRealize Automation After Upgrade</a>.</li><li>Added <a href="#">Prepare vRealize Automation Virtual Machines for Upgrade</a>.</li></ul>
30 AUG 2017	<ul style="list-style-type: none"><li>Added <a href="#">Upgrade and Catalog Items</a></li><li>Revised <a href="#">Migrate an External vRealize Orchestrator on Windows to vRealize Automation</a>.</li><li>Revised <a href="#">Catalog Items Appear in the Service Catalog After Upgrade But Are Not Available to Request</a>.</li></ul>
07 AUG 2017	<ul style="list-style-type: none"><li>Added <a href="#">Prepare vRealize Automation Virtual Machines for Upgrade</a>.</li><li>Added <a href="#">Update Fails to Upgrade the Management Agent</a>.</li><li>Revised <a href="#">Checklist for Upgrading vRealize Automation</a>.</li><li>Revised <a href="#">Prerequisites for Upgrading vRealize Automation</a>.</li><li>Added <a href="#">Restore Access to Built-In vRealize Orchestrator Control Center</a>.</li><li>Added <a href="#">Reconfigure the Built-In vRealize Orchestrator to Support High Availability</a>.</li></ul>
002422-01	<ul style="list-style-type: none"><li>Made minor editorial updates.</li><li>Changed topic title and added more information to <a href="#">Run Test Connection and Verify Upgraded Endpoints</a>.</li><li>Added vRealize Orchestrator migration topics.</li><li>Revised <a href="#">Install the Update on the vRealize Automation 6.2.5 Appliance</a>.</li><li>Revised <a href="#">Certificate Not Trusted Error</a>.</li><li>Added <a href="#">Installing or Upgrading vRealize Automation Fails</a>.</li></ul>
002422-00	Initial release.

# Upgrading vRealize Automation 6.2.5 to 7.3 or 7.3.1

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You can perform an in-place upgrade of your current vRealize Automation 6.2.5 environment to 7.3 or 7.3.1. You use upgrade procedures specific to this version to upgrade your environment.

An in-place upgrade is a three-stage process. You update the components in your current environment in this order.

- 1 vRealize Automation appliance
- 2 IaaS web server
- 3 vRealize Orchestrator

You must upgrade all product components to the same version.

Beginning with vRealize Automation 7.2, JFrog Artifactory Pro is no longer bundled with the vRealize Automation appliance. If you upgrade from an earlier version of vRealize Automation, the upgrade process removes JFrog Artifactory Pro. For more information, see [Knowledge Base article 2147237](#).

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**Note** If you have customized your current vRealize Automation 6.2.5 environment, contact your CCE support staff for additional upgrade information.

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This chapter includes the following topics:

- [Prerequisites for Upgrading vRealize Automation](#)
- [Considerations About Upgrading to This vRealize Automation Version](#)
- [Checklist for Upgrading vRealize Automation](#)

## Prerequisites for Upgrading vRealize Automation

Before you upgrade, vRealize Automation 6.2.5 to 7.3 or 7.3.1, review the following prerequisites.

### System Configuration Requirements

Verify that the following system requirements are met before you begin an upgrade.

- Verify that all appliances and servers that are part of your deployment meet the system requirements for the latest version. See the *vRealize Automation Support Matrix* at [VMware vRealize Automation Documentation](#).

- Consult the *VMware Product Interoperability Matrix* on the VMware website 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 6.2.5, record the vCloud Suite license key you use for your current vRealize Automation environment. Upon upgrade, existing license keys are removed from the database.

## Hardware Configuration Requirements

Verify that the hardware in your environment is adequate for vRealize Automation 7.3 or 7.3.1.

See *vRealize Automation Hardware Specifications and Capacity Maximums* in Reference Architecture in the vRealize Automation documentation.

Verify that the following system requirements are met before you begin an upgrade.

- You must configure your current hardware before you download the upgrade. See [Increase vCenter Server Hardware Resources for vRealize Automation 6.2.5](#).
- You must have at least 18 GB RAM, 4 CPUs, Disk1=50 GB, Disk3=25 GB, and Disk4=50 GB before you run the upgrade.

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

Although general support for vCloud Networking and Security 5.5.x (vCNS) ended in September 2016, the VCNS custom properties continue to be valid for NSX purposes. See the VMware Knowledge Base article *End of Availability and End of General Support for VMware vCloud Networking and Security 5.5.x (2144733)* at <http://kb.vmware.com/kb/2144733> for more information.

- These nodes must have at least 5 GB of free disk space:
  - Primary IaaS Website
  - Microsoft SQL database
  - Model Manager
- The primary IaaS Website node where the Model Manager data is installed must have JAVA SE Runtime Environment 8, 64 bits, update 161 or later installed. After you install Java, you must set the JAVA\_HOME environment variable to the new version.
- To download and run the upgrade, you must have the following resources:
  - At least 5 GB on the root partition
  - 5 GB on the /storage/db partition for the master vRealize Automation appliance
  - 5 GB on the root partition for each replica virtual appliance
- Check the /storage/Log subfolder and remove any older archived ZIP files to clean up space.



## General Prerequisites

Verify that the following system requirements are met 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 meet these conditions:
  - You have access to an account with a SAMaccountName format.
  - You have 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 [Knowledge Base article 2089503](#).
- If your environment has an external vRealize Orchestrator appliance, and an external vRealize Orchestrator appliance connected to the Identity Appliance, upgrade vRealize Orchestrator before you upgrade vRealize Automation.
- Complete these steps if you are upgrading a distributed environment configured with an embedded PostgreSQL database.
  - a Examine the files in the pgdata directory on the master host before you upgrade the replica hosts.
  - b Navigate to the PostgreSQL data folder on the master host at /var/vmware/vpostgres/current/pgdata/.
  - c Close any opened files in the pgdata directory and remove any files with a .swp suffix.
  - d Verify that all files in this directory have correct ownership: postgres:users.
- You must review [Knowledge Base article 000051531](#) and perform any relevant fixes to your environments prior to upgrade.

## Considerations About Upgrading to This vRealize Automation Version

vRealize Automation 7 and later introduces various functional changes during and after the upgrade process. You should review these changes before you upgrade your vRealize Automation 6.2.x deployment to the new version.

Review the following considerations before you upgrade.

## Upgrade and Identity Appliance Specifications

During the vRealize Automation upgrade process, you answer prompts to upgrade the identity appliance.

The target deployment uses the VMware Identity Manager.

## Upgrade and Licensing

During the upgrade, your existing vRealize Automation 6.2.5 licenses, and any vCloud Suite 6.x licenses that you have, are removed. You must reenter your licenses in the vRealize Automation 7.3 or 7.3.1 vRealize Automation appliance management console.

You now use vRealize Automation licensing for virtual appliances and IaaS by entering license key information in the vRealize Automation appliance. Licensing information is no longer available in the IaaS user interface and IaaS no longer performs licensing checks. Endpoints and quotas are enforced through the end-user license agreements (EULAs).

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**Note** Write down your vCloud Suite 6.x license key if you used it for vRealize Automation 6.2.5 before the upgrade. Upon upgrade, existing license keys are removed from the database.

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For more information about reentering your license information during or after upgrade, see [Update the License Key](#).

## Understanding How Roles Are Upgraded

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

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

- Application architect. Assembles existing components and blueprints to create composite blueprints.
- Infrastructure architect. Creates and manages virtual machine blueprints.
- XaaS architect. Creates and manages XaaS blueprints.
- Software architect. Creates and manages Software components.

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

Users who can reconfigure a virtual machine in the vRealize Automation 6.2.x source version can change virtual machine ownership after you upgrade to the new version.

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

**Table 1-1. Roles Assigned during Upgrade**

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

For more information about tenant roles, see *Tenant Roles and Responsibilities in vRealize Automation in Foundations and Concepts*.

## Understanding How Blueprints Are Upgraded

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

However, there are exceptions to that rule. Multi-machine blueprints are upgraded as composite blueprints that contain blueprint components. Multi-machine blueprints that contain unsupported settings are upgraded as unpublished.

**Note** vRealize Automation 7.x takes a blueprint snapshot at deployment. If you encounter reconfigure problems when updating machine properties such as CPU and RAM in a deployment, see Knowledge Base article [2150829 vRA 7.x Blueprint Snapshotting](#).

For more information about upgrading blueprints, see [Upgrade and vApp Blueprints, vCloud Endpoints, and vCloud Reservations](#) and [Understanding How Multi-Machine Blueprints Are Upgraded](#).

## Upgrade and vApp Blueprints, vCloud Endpoints, and vCloud Reservations

You cannot upgrade a deployment that contains vApp (vCloud) endpoints. The presence of vApp (vCloud) endpoints prevents upgrade to this vRealize Automation version.

Upgrade fails on the master virtual appliance if there is a vApp (vCloud) endpoint in the source deployment. A message appears in the user interface and log. To determine if your source deployment contains a vApp (vCloud) endpoint, log in to the vRealize Automation console as IaaS administrator user. Select **Infrastructure > Endpoints**. If the endpoints list contains vApp (vCloud) endpoints, you cannot upgrade to this vRealize Automation version.

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

**Note** The following approval policy types are deprecated. If they appear in the list of available approval policy types after upgrade is finished, they are unusable.

- Service Catalog - Catalog Item Request - vApp
- Service Catalog - Catalog Item Request - vApp Component

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

## Understanding How Multi-Machine Blueprints Are Upgraded

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

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

The upgrade creates a single composite blueprint in the target deployment that contains one virtual machine component for each component blueprint in the source multi-machine blueprint. If a blueprint has a setting that is not supported in the new version, the blueprint is upgraded and set to draft status. For example, if the multi-machine blueprint contains a private network profile, upgrade ignores the profile setting, and the blueprint is upgraded in a draft state. You can edit the draft blueprint to enter supported network profile information and publish it.

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

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

You can upgrade a multi-machine blueprint with vSphere endpoints and NSX network and security settings. The upgraded blueprint contains NSX network and security components in the design canvas.

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

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

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**Note** vRealize Automation 7.x takes a blueprint snapshot at deployment. If you encounter reconfigure problems when updating machine properties such as CPU and RAM in a deployment, see Knowledge Base article [2150829 vRA 7.x Blueprint Snapshotting](#).

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

- Settings for the overall blueprint on its properties page. This information includes app isolation, transport zone, and routed gateway or NSX edge reservation policy information.
- Available settings for vSphere virtual machine components in NSX network and security components in the design canvas.
- Settings in the network and security tabs of individual vSphere virtual machine components in the design canvas.

## Upgrade and Physical Endpoints, Reservations, and Blueprints

You cannot upgrade a deployment that contains physical endpoints. If physical endpoints are present, the vRealize Automation upgrade process fails.

Upgrade fails on the master virtual appliance when the vRealize Automation 6.2.x deployment has a physical endpoint. A failure message appears in the migration interface and log. To determine if your vRealize Automation 6.2.x deployment has a physical endpoint, log in to vRealize Automation as an IaaS administrator user. Select **Infrastructure > Endpoints** and review the endpoints list. If the list has a Platform Type `Physical` endpoint, you cannot upgrade to vRealize Automation 7.0 and later.

Physical endpoints, reservations, and virtual machine components in blueprints are not supported in vRealize Automation 7.0 and later.

## Upgrade and Network Profile Settings

Private network profiles are not supported in vRealize Automation 7 and later. These profiles are ignored during the upgrade. Routed network profiles with associated PLR edge settings are also not supported in vRealize Automation 7 and later. These profiles are also ignored during the upgrade.

The private network profile type is not supported in vRealize Automation 7 and later. When the vRealize Automation upgrade process finds a private network profile in the source deployment, it ignores the network profile. Load balancers that reference those private networks are also ignored during upgrade. The same upgrade conditions are true for a routed network profile with associated PLR edge settings. Neither network profile configuration is upgraded.

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

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

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

## Upgrade and Entitled Actions

You cannot upgrade virtual machine actions.

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

For related information, see *Actions in Entitlements* in *Configuring vRealize Automation*.

## Upgrade and Custom Properties

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

## Terminology and Related Changes

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

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

## Case-sensitivity in Custom Property Names

Before vRealize Automation 7.0, custom property names were case-insensitive. In vRealize Automation 7.0 and later, custom property names are case-sensitive. During upgrade, custom property names must be an exact match. This ensures that property values do not override one another and that they match property dictionary definitions. For example, a custom property `hostname` and another custom property `HOSTNAME` are considered different custom properties by vRealize Automation 7.0 and later. The custom property `hostname` and the custom property `HOSTNAME` do not override one another during upgrade.

## Spaces in Custom Property Names

Before upgrading to this release of vRealize Automation, remove any space characters from your custom property names, for example replace the space with an underscore character, to allow the custom property to be recognized in the upgraded vRealize Automation installation. vRealize Automation custom property names cannot contain spaces. This issue can also impact use of an upgraded vRealize Orchestrator installation that uses custom properties that contained spaces in earlier releases of either vRealize Automation or vRealize Orchestrator or both.

## Reserved Property Names

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

## Upgrade and Application Services

Application Services upgrade is supported in vRealize Automation 7 and later.

After successful migration to vRealize Automation 7.3, you can use the vRealize Automation Application Services Migration Tool to upgrade your application services. Complete these steps to download the tool.

- 1 Click [Download VMware vRealize Automation](#).
- 2 Select **Drivers & Tools > VMware vRealize Application Services Migration Tool**.

## Upgrade and Advanced Service Design

When you upgrade to vRealize Automation 7 and later, your Advanced Service Design items are upgraded to XaaS elements.

XaaS components are available for use in the design canvas.

## Upgrade and Blueprint Price Information

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

vRealize Business for Cloud is now tightly integrated with vRealize Automation and supports the following enhanced pricing features.

- Unified location in vRealize Business for Cloud to define flexible pricing policies for:
  - Infrastructure resource, machine, and application blueprints
  - Provisioned virtual machines in vRealize Automation for supported endpoints such as vCenter Server, vCloud Director, Amazon Web Services, Azure, and OpenStack.
  - Any operational price, one time price, and price on custom properties of provisioned virtual machines
  - Deployments, which include the price of virtual machines within the deployments
- Role-based showback reports in vRealize Business for Cloud
- Fully leverage new features in vRealize Business for Cloud

Before you upgrade, you can export your existing expense reports from your source vRealize Automation instance for reference. After you finish your upgrade, you can install and configure vRealize Business for Cloud to handle pricing.

---

**Note** vRealize Automation 7.3.x is compatible only with vRealize Business for Cloud 7.3 and later.

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## Upgrade and Catalog Items

After you upgrade from vRealize Automation 6.2.x to the latest version, some catalog items appear in the service catalog but are not available to request.

After you migrate to the latest version of vRealize Automation, catalog items that use these property definitions appear in the service catalog but are not available to request.

- Control types: Check box or link.

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

In vRealize Automation 7.x, the property definitions no longer use these elements. 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. For more information, see [Catalog Items Appear in the Service Catalog After Upgrade But Are Not Available to Request](#).

## Checklist for Upgrading vRealize Automation

When you upgrade vRealize Automation from 6.2.5 to 7.3 or 7.3.1, you update all vRealize Automation components in a specific order.

Use the checklists to track your work as you complete the upgrade. Finish the tasks in the order they are given.

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

---

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

**Table 1-2. Checklist to Upgrade a Minimal vRealize Automation Environment**

Task	Instructions
<input type="checkbox"/> Back up your current installation. Making this backup is a critical task.	For more information on how to back up and restore your system, see <a href="#">Back Up Your Existing vRealize Automation 6.2.5 Environment</a> .  For general information, see <i>Configuring Backup and Restore by Using Symantec Netbackup</i> at <a href="http://www.vmware.com/pdf/vrealize-backup-and-restore-netbackup.pdf">http://www.vmware.com/pdf/vrealize-backup-and-restore-netbackup.pdf</a>
<input type="checkbox"/> Prepare vRealize Automation 6.2.x virtual machines for upgrade.	You must review <a href="#">Knowledge Base article 000051531</a> and perform any relevant fixes to your environments prior to upgrade.
<input type="checkbox"/> Shut down vRealize Automation Windows services on your IaaS server.	See <a href="#">Stop vRealize Automation Services on the IaaS Windows Server</a> .



**Table 1-2. Checklist to Upgrade a Minimal vRealize Automation Environment (Continued)**

Task	Instructions
<p><input type="checkbox"/> If the Common Components Catalog is installed, you must uninstall it before you upgrade.</p>	<p>For information about how to uninstall Common Components Catalog components, see the <i>Common Components Catalog Installation Guide</i>.</p> <p>If this guide is unavailable, do these steps on each IaaS node.</p> <ol style="list-style-type: none"> <li>1 Log in to the IaaS node.</li> <li>2 Click <b>Start</b>.</li> <li>3 Enter <b>services</b> in the <b>Search programs and files</b> text box.</li> <li>4 Click <b>Services</b>.</li> <li>5 In the right pane of the Services window, right-click each IaaS service and select <b>Stop</b> to stop each service.</li> <li>6 Click <b>Start &gt; Control Panel &gt; Programs and Features</b>.</li> <li>7 Right-click each installed Common Components Catalog component, and select <b>Uninstall</b>.</li> <li>8 Click <b>Start &gt; Command Prompt</b>.</li> <li>9 At the command prompt, run <b>iisreset</b>.</li> </ol>
<p><input type="checkbox"/> Review Considerations for Upgrading to this vRealize Automation Version to know what can be upgraded, what cannot be upgraded, and how upgraded items might behave differently.</p> <p>Not all items, including blueprints, reservations, and endpoints can be upgraded. The presence of some unsupported configurations blocks upgrade.</p>	<p>See <a href="#">Considerations About Upgrading to This vRealize Automation Version</a>.</p>
<p><input type="checkbox"/> Configure your hardware resources.</p>	<p>See <a href="#">Increase vCenter Server Hardware Resources for vRealize Automation 6.2.5</a>.</p>
<p><input type="checkbox"/> Download updates to the vRealize Automation appliance.</p>	<p>See <a href="#">Downloading vRealize Automation Appliance Updates</a>.</p>
<p><input type="checkbox"/> Install the update on the vRealize Automation appliance.</p>	<p>See <a href="#">Install the Update on the vRealize Automation 6.2.5 Appliance</a>.</p>
<p><input type="checkbox"/> Update the Single-Sign On utility to the VMware Identity Manager utility.</p>	<p>See <a href="#">Update Your Single Sign-On Password for VMware Identity Manager</a>.</p>
<p><input type="checkbox"/> Update the license key.</p>	<p>See <a href="#">Update the License Key</a>.</p>
<p><input type="checkbox"/> Migrate the Identity Store to the VMware Identity Manager.</p>	<p><a href="#">Migrate Identity Stores to VMware Identity Manager</a></p>
<p><input type="checkbox"/> Upgrade IaaS components.</p>	<p>See <a href="#">Chapter 5 Upgrading the IaaS Server Components After Upgrading vRealize Automation</a>.</p>
<p><input type="checkbox"/> Upgrade the external vRealize Orchestrator.</p>	<p>See <a href="#">Upgrading Stand-Alone vRealize Orchestrator Appliance for Use with vRealize Automation</a>.</p> <p>See <a href="#">Upgrading External vRealize Orchestrator Appliance Cluster for Use with vRealize Automation</a></p>
<p><input type="checkbox"/> Add users or groups to an Active Directory connection.</p>	<p>See <a href="#">Chapter 7 Add Users or Groups to an Active Directory Connection</a>.</p>

**Table 1-3. Checklist to Upgrade a vRealize Automation Distributed Environment**

Task	Instructions
<input type="checkbox"/> Back up your current installation. Making this backup is a critical task.	<p>For more information on how to back up and restore your system, see <a href="#">Back Up Your Existing vRealize Automation 6.2.5 Environment</a>.</p> <p>For detailed information, see <i>Configuring Backup and Restore by Using Symantec Netbackup</i> at <a href="http://www.vmware.com/pdf/vrealize-backup-and-restore-netbackup.pdf">http://www.vmware.com/pdf/vrealize-backup-and-restore-netbackup.pdf</a></p>
<input type="checkbox"/> Shut down vRealize Automation services on your IaaS Windows servers.	<p>See <a href="#">Stop vRealize Automation Services on the IaaS Windows Server</a>.</p>
<input type="checkbox"/> If the Common Components Catalog is installed, you must uninstall it before you upgrade.	<p>For information about how to uninstall Common Components Catalog components, see the <i>Common Components Catalog Installation Guide</i>.</p> <p>If this guide is unavailable, do these steps on each IaaS node.</p> <ol style="list-style-type: none"> <li>1 Log in to the IaaS node.</li> <li>2 Click <b>Start</b>.</li> <li>3 Enter <b>services</b> in the <b>Search programs and files</b> text box.</li> <li>4 Click <b>Services</b>.</li> <li>5 In the right pane of the Services window, right-click each IaaS service and select <b>Stop</b> to stop each service.</li> <li>6 Click <b>Start &gt; Control Panel &gt; Programs and Features</b>.</li> <li>7 Right-click each installed Common Components Catalog component, and select <b>Uninstall</b>.</li> <li>8 Click <b>Start &gt; Command Prompt</b>.</li> <li>9 At the command prompt, run <b>iisreset</b>.</li> </ol>
<input type="checkbox"/> Configure your hardware resources for the upgrade.	<p>See <a href="#">Increase vCenter Server Hardware Resources for vRealize Automation 6.2.5</a>.</p>
<input type="checkbox"/> Disable your load balancers.	<p>Disable each secondary node and remove the vRealize Automation health monitors for the following items.</p> <ul style="list-style-type: none"> <li>■ vRealize Automation appliance</li> <li>■ IaaS website</li> <li>■ IaaS Manager Service</li> </ul> <p>For a successful upgrade, verify the following:</p> <ul style="list-style-type: none"> <li>■ Load balancer traffic is directed only to the primary node.</li> <li>■ vRealize Automation health monitors are removed for the appliance, website, and Manager Service.</li> </ul>
<input type="checkbox"/> Download updates to the vRealize Automation appliance.	<p>See <a href="#">Downloading vRealize Automation Appliance Updates</a>.</p>
<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.	<p>See <a href="#">Install the Update on the vRealize Automation 6.2.5 Appliance</a>.</p>
<input type="checkbox"/> Update the Single-Sign On utility to the VMware Identity Manager utility.	<p>See <a href="#">Update Your Single Sign-On Password for VMware Identity Manager</a>.</p>

**Table 1-3. Checklist to Upgrade a vRealize Automation Distributed Environment (Continued)**

Task	Instructions
<input type="checkbox"/> Update the license key.	See <a href="#">Update the License Key</a> .
<input type="checkbox"/> Migrate the Identity Store to the VMware Identity Manager utility.	<a href="#">Migrate Identity Stores to VMware Identity Manager</a>
<input type="checkbox"/> Install the update on the rest of your vRealize Automation appliances.	<a href="#">Install the Update on Additional vRealize Automation Appliances</a>
<input type="checkbox"/> Upgrade IaaS components.	See <a href="#">Chapter 5 Upgrading the IaaS Server Components After Upgrading vRealize Automation</a> .
<input type="checkbox"/> Upgrade the external vRealize Orchestrator.	See <a href="#">Upgrading Stand-Alone vRealize Orchestrator Appliance for Use with vRealize Automation</a> . See <a href="#">Upgrading External vRealize Orchestrator Appliance Cluster for Use with vRealize Automation</a>
<input type="checkbox"/> Enable your load balancers.	<a href="#">Chapter 8 Enable Your Load Balancers</a>

# Upgrading VMware Products Integrated with vRealize Automation

## 2

You must manage any VMware products integrated with your vRealize Automation environment when you upgrade vRealize Automation.

If your vRealize Automation environment is integrated with one or more additional products, you should upgrade vRealize Automation before you update the additional products. If vRealize Business for Cloud is integrated with vRealize Automation, you must unregister vRealize Business for Cloud before you upgrade vRealize Automation.

Follow the suggested workflow for managing integrated products when you upgrade vRealize Automation.

- 1 Upgrade vRealize Automation.
- 2 Upgrade VMware vRealize Operations Manager and apply the latest management pack.
- 3 Upgrade VMware vRealize Log Insight.
- 4 Upgrade VMware vRealize Business for Cloud.

This section provides additional guidance for managing vRealize Business for Cloud when it is integrated with your vRealize Automation environment.

This chapter includes the following topics:

- [Upgrading vRealize Operations Manager Integrated with vRealize Automation](#)
- [Upgrading vRealize Log Insight Integrated with vRealize Automation](#)
- [Upgrading vRealize Business for Cloud Integrated with vRealize Automation](#)

## Upgrading vRealize Operations Manager Integrated with vRealize Automation

Upgrade vRealize Operations Manager after you upgrade vRealize Automation.

### Procedure

- 1 Upgrade vRealize Automation.
- 2 Upgrade vRealize Operations Manager. For information, see *Updating Your Software* in the VMware vRealize Operations Manager Documentation.

## Upgrading vRealize Log Insight Integrated with vRealize Automation

Upgrade vRealize Log Insight after you upgrade vRealize Automation.

### Procedure

- 1 Upgrade vRealize Automation.
- 2 Upgrade vRealize Log Insight. For information, see *Upgrading vRealize Log Insight* in the VMware vRealize Log Insight Documentation.

## Upgrading vRealize Business for Cloud Integrated with vRealize Automation

When you upgrade your vRealize Automation environment, you must unregister and register your connection to vRealize Business for Cloud.

Perform this procedure to ensure continuity of service with vRealize Business for Cloud when you upgrade your vRealize Automation environment.

### Procedure

- 1 Unregister vRealize Business for Cloud from vRealize Automation. See *Unregister vRealize Business for Cloud from vRealize Automation* in the vRealize Business for Cloud Documentation.
- 2 Upgrade vRealize Automation.
- 3 If necessary, upgrade vRealize Business for Cloud for Cloud. See *Upgrading vRealize Business for Cloud* in the vRealize Business for Cloud Documentation.
- 4 Register vRealize Business for Cloud with vRealize Automation. See *Register vRealize Business for Cloud with vRealize Automation* in the vRealize Business for Cloud Documentation.

# Preparing to Upgrade vRealize Automation

# 3

You must perform various tasks and procedures before you upgrade vRealize Automation from 6.2.5 to 7.3 or 7.3.1.

Perform the tasks in the order they appear in the upgrade checklist. See [Checklist for Upgrading vRealize Automation](#).

This chapter includes the following topics:

- [Prepare vRealize Automation Virtual Machines for Upgrade](#)
- [Backup Prerequisites for Upgrading vRealize Automation](#)
- [Stop vRealize Automation Services on the IaaS Windows Server](#)
- [Downloading vRealize Automation Appliance Updates](#)

## Prepare vRealize Automation Virtual Machines for Upgrade

Known issues with upgrading vRealize Automation virtual machines can cause problems after upgrade.

You must review [Knowledge Base article 000051531](#) and perform any relevant fixes to your environments prior to upgrade.

### What to do next

[Backup Prerequisites for Upgrading vRealize Automation](#).

## Backup Prerequisites for Upgrading vRealize Automation

Finish the backup prerequisites before you upgrade vRealize Automation 6.2.5 to 7.3 or 7.3.1

### Prerequisites

- Verify that your source environment is fully installed and configured.
- For each appliance in the source environment, back up all the vRealize Automation appliance configuration files in the following directories.
  - `/etc/vcac/`
  - `/etc/vco/`

- `/etc/apache2/`
- `/etc/rabbitmq/`
- Back up the vRealize Automation external workflow configuration (xmldb) files on your system. Store the backup files in a temporary directory. These files are at `\\VMware\vcA\Server\ExternalWorkflows\xmldb\`. You restore the xmldb files on your new system after migration. See [Restore External Workflow Timeout Files](#).

For a related problem, see [Backup Copies of .xml Files Cause the System to Time Out](#).

- Back up the external vRealize Automation PostgreSQL database. To see if your PostgreSQL database is external, complete these steps.
  - a Log in to the vRealize Automation appliance management console by using its fully qualified domain name, `https://va-hostname.domain.name:5480`.

For a distributed environment, log in to the primary vRealize Automation appliance management console.

b Select **vRA Settings > Database**.

- c If the vRealize Automation PostgreSQL database node host is different from the vRealize Automation appliance host, back up the database. If the database node host is the same as the appliance host, you do not need to back up the database.

For information about the PostgreSQL database backup, see <https://www.postgresql.org/>.

- Create a snapshot of your tenant configuration and the users assigned.
- Back up any files you have customized, such as `DataCenterLocations.xml`.
- Create a snapshot of each virtual appliance and IaaS server. Adhere to regular guidelines for backing up the entire system in case the vRealize Automation upgrade is unsuccessful. See *Backup and Recovery for vRealize Automation Installations in Managing vRealize Automation*.

## Back Up Your Existing vRealize Automation 6.2.5 Environment

Before you upgrade, shut down and take a snapshot of your vRealize Automation 6.2.5 environment components.

Before you upgrade, take a snapshot of these components while your system is shut down.

- vRealize Automation IaaS servers (Windows nodes)
- vRealize Automation appliances (Linux nodes)
- vRealize Automation (SSO) Identity node

If the upgrade fails, use the snapshot to return to the last known good configuration and attempt another upgrade.

### Prerequisites

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

- If your environment has an external PostgreSQL database, create a database backup file.
- If the vRealize Automation Microsoft SQL database is not hosted on the IaaS server, create a database backup file. For information, find article on the [Microsoft Developer Network](#) about creating a full SQL Server database backup.
- Verify that you have completed the backup prerequisites for upgrading.
- Verify that you have taken a snapshot of your system while it is shut down. This is the preferred method of taking a snapshot. See your *vSphere 6.0 Documentation*.

If you cannot shut down your system, take an in-memory snapshot of all the nodes. This is the non-preferred method and should only be used if you cannot take a snapshot while the system is shut down.

- If you modified the `app.config` file, make a backup of that file. See [Restore Changes to Logging in the app.config File](#).
- Make a backup of the external workflow configuration (xmldb) files. See [Restore External Workflow Timeout Files](#).
- Verify that you have a location outside your current folder where you can store your backup file. See [Backup Copies of .xml Files Cause the System to Time Out](#).

#### Procedure

- 1 Log in to your vCenter Server.
- 2 Locate these vRealize Automation 6.2.5 components.
  - vRealize Automation IaaS servers (Windows nodes)
  - vRealize Automation appliances (Linux nodes)
  - vRealize Automation (SSO) Identity node
- 3 For each of the following virtual machines, select the virtual machine, click **Shutdown guest**, and wait for the virtual machine to stop. Shut down these virtual machines in the following order.
  - a IaaS proxy agent virtual machines
  - b DEM Worker virtual machines
  - c DEM Orchestrator virtual machine
  - d Manager Service virtual machine
  - e Web Service virtual machines
  - f Secondary vRealize Automation virtual appliances
  - g Primary vRealize Automation virtual appliance
  - h Manager virtual machines (if any)
  - i Identity Appliance
- 4 Take a snapshot of each vRealize Automation 6.2.5 virtual machine.



- 5 Clone each vRealize Automation appliance node.

You perform the upgrade on the cloned virtual machines.

- 6 Power off each original vRealize Automation appliance virtual machine before you upgrade the cloned virtual machines.

Keep the original virtual machines powered off and use them only if you must restore the system.

#### What to do next

[Increase vCenter Server Hardware Resources for vRealize Automation 6.2.5.](#)

## Increase vCenter Server Hardware Resources for vRealize Automation 6.2.5

Before you upgrade from vRealize Automation 6.2.5, you must increase hardware resources for each vRealize Automation appliance.

This procedure assumes that you use the Windows vCenter Server client.

#### Prerequisites

- Verify that you have a clone of each vRealize Automation appliance.
- Verify that you have at least 140 GB of free space in your vCenter Server for each appliance clone.
- Verify that the original appliances are powered off.

#### Procedure

- 1 Log in to vCenter Server.
- 2 Right-click a cloned vRealize Automation appliance icon and select **Edit Settings**.
- 3 Select **Memory** and set the value to 18 GB.
- 4 Select **CPU** and set the **Number of virtual sockets** value to 4.
- 5 Extend the size of virtual Disk 1 to 50 GB.
  - a Select Disk 1.
  - b Change the size to 50 GB.
  - c Click **OK**.
- 6 If you do not have Disk 3, complete these steps to add a Disk 3 with a disk size of 25 GB.
  - a Click **Add** above the Resources table to add a virtual disk.
  - b Select **Hard Disk** for the **Device Type**, and click **Next**.
  - c Select **Create a new virtual disk**, and click **Next**.
  - d Set **disk size** value to 25 GB.
  - e Select **Store with the virtual machine** and click **Next**.

- f Verify that the **Independent** option is deselected for **Mode** and **SCSI (0:2)** is selected for **Virtual Device Mode**, and click **Next**.  
If prompted to accept recommended settings, accept the recommended settings.
  - g Click **Finish**.
  - h Click **OK**.
- 7 If there is an existing virtual Disk 4 from a previous vRealize Automation release, complete these steps.
- a Power on the primary virtual appliance clone and wait 1 minute.
  - b Power on the secondary virtual appliance clone.
  - c On the primary virtual appliance clone, open a new command prompt and navigate to `/etc/fstab`.
  - d On the primary virtual appliance clone, open the `fstab` file, and remove lines starting with `/dev/sdd` that contain the `Wal_Archive` write ahead logs.
  - e On the primary virtual appliance clone, save the file.
  - f On the secondary virtual appliance clone, open a new command prompt and navigate to `/etc/fstab`.
  - g On the secondary virtual appliance clone, open the `fstab` file, and remove lines starting with `/dev/sdd` that contain the `Wal_Archive` write ahead logs.
  - h On the secondary virtual appliance clone, save the file.
  - i Power off the secondary virtual appliance clone and wait 1 minute.
  - j Power off the primary virtual appliance clone.
  - k Right-click the cloned vRealize Automation primary appliance icon and select **Edit Settings**.
  - l Delete Disk 4 on the cloned primary virtual appliance machine.
  - m Right-click the cloned vRealize Automation secondary appliance icon and select **Edit Settings**.
  - n Delete Disk 4 on the cloned secondary virtual appliance machine.
- 8 Complete these steps to add a Disk 4 with a disk size of 50 GB to the cloned primary and secondary virtual appliance machines.
- a Click **Add** above the Resources table to add a virtual disk.
  - b Select **Hard Disk** for the **Device Type**, and click **Next**.
  - c Select **Create a new virtual disk**, and click **Next**.
  - d Set **disk size** value to 50 GB.
  - e Select **Store with the virtual machine** and click **Next**.

- f Verify that the **Independent** option is deselected for **Mode** and **SCSI (0:3)** is selected for **Virtual Device Mode**, and click **Next**.

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

- g Click **Finish**.

- h Click **OK**.

- 9 Create a snapshot of the cloned primary virtual appliance machine and the cloned secondary virtual appliance machine.

#### What to do next

[Power On the Entire System.](#)

## Power On the Entire System

After you increase the vCenter hardware resources for upgrade, you power on the system before you perform the upgrade.

#### Prerequisites

- [Back Up Your Existing vRealize Automation 6.2.5 Environment.](#)
- [Increase vCenter Server Hardware Resources for vRealize Automation 6.2.5.](#)

#### Procedure

- 1 Power on the entire system.

For instructions, see the vRealize Automation 6.2 version of the [Restart vRealize Automation](#) topic.

---

**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.

- 
- 2 Verify that the system is fully functional.

#### What to do next

[Stop vRealize Automation Services on the IaaS Windows Server.](#)

## Stop vRealize Automation Services on the IaaS Windows Server

When necessary, you can use the following procedure to stop vRealize Automation services on each server that is running IaaS services.

Before you begin the upgrade, stop vRealize Automation services on each IaaS Windows server.

---

**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. If you set services to Manual, the upgrade process fails.

---

### Procedure

- 1 Log in to your IaaS Windows server.
- 2 Select **Start > Administrative Tools > Services**.
- 3 Stop services in the following order. Be careful not to shut down the virtual machine.  
Each virtual machine has a Management agent, which must be stopped with each set of services.
  - a Each VMware vCloud Automation Center Agent
  - b Each VMware DEM-Worker
  - c The VMware DEM-Orchestrator
  - d The VMware vCloud Automation Center Service

- 4 For distributed deployments with load balancers, disable each secondary node and remove the vRealize Automation health monitors for the following items.
  - a vRealize Automation appliance
  - b IaaS Website
  - c IaaS Manager Service

Verify that load balancer traffic is directed only to the primary nodes and that the vRealize Automation health monitors are removed for the appliance, Website, and Manager Service, otherwise the upgrade fails.

- 5 Verify that the IaaS service hosted in Microsoft Internet Information Services (IIS) is running by performing the following steps.
  - a In your browser, go to 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`.

For a distributed IaaS Website, log in to the secondary Website, without MMD, and stop the Microsoft IIS server temporarily. Check the `MetaModel.svc` connectivity. To verify that the load balancer traffic is going through only the primary Web node, start the Microsoft IIS server.

### What to do next

[Downloading vRealize Automation Appliance Updates.](#)

## Downloading vRealize Automation Appliance Updates

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

For best upgrade performance, use the ISO file method.

- [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 website.
- [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. This is the preferred method.

### 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 website.

#### Prerequisites

- Back up your existing vRealize Automation environment.
- Verify that your vRealize Automation 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 entered when you deployed the appliance.
- 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**.

### 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. This is the preferred method.

You download the ISO file and set up the primary appliance to use this file to upgrade your appliance.

## Prerequisites

- Back up your existing vRealize Automation environment.
- Verify that all CD-ROM drives you use in your upgrade are enabled before you update a vRealize Automation appliance. See the vSphere documentation for information about adding a CD-ROM drive to a virtual machine in the vSphere client.

## Procedure

- 1 To download the update repository ISO file, go to the [vRealize Automation product page](#) at [www.vmware.com](http://www.vmware.com). Click **vRealize Automation Download Resources** to go to the VMware download page.
- 2 Locate the downloaded file on your system to verify that the file size is the same as the file on the VMware download page. Use the checksums provided on the download page to validate the integrity of your downloaded file. For more information, see the links at the bottom of the VMware download page.
- 3 Verify that your primary virtual appliance is powered on.
- 4 Connect the CD-ROM drive for the primary virtual appliance 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 entered when you deployed the appliance.
- 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

# 4

After you complete the upgrade prerequisites and download the virtual appliance update, you update the vRealize Automation 6.2.5 Appliance to 7.3 or 7.3.1. You also reconfigure some settings for the primary vRealize Automation appliance.

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 IaaS Web site
- 3 IaaS Manager Service
- 4 IaaS DEM
- 5 IaaS Agent
- 6 Upgrade or migrate each external vRealize Orchestrator instance

This chapter includes the following topics:

- [Install the Update on the vRealize Automation 6.2.5 Appliance](#)
- [Update Your Single Sign-On Password for VMware Identity Manager](#)
- [Update the License Key](#)
- [Migrate Identity Stores to VMware Identity Manager](#)
- [Install the Update on Additional vRealize Automation Appliances](#)

## Install the Update on the vRealize Automation 6.2.5 Appliance

You install the vRealize Automation update on the vRealize Automation 6.2.5 appliance and configure the appliance settings.

Support for an external PostgreSQL database is discontinued beginning with vRealize Automation 7.1. The upgrade process merges the data from an existing PostgreSQL external database with the PostgreSQL internal database that is part of the vRealize Automation appliance.

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 10 Troubleshooting the vRealize Automation Upgrade](#).

### Prerequisites

- Verify that you selected a download method and downloaded the update. See [Downloading vRealize Automation Appliance Updates](#).
- For high-availability distributed deployments, see [Back Up Your Existing vRealize Automation 6.2.5 Environment](#).
- For deployments with load balancers, verify that the traffic is directed only to the primary node and that the health monitors are disabled.
- 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*. If this guide is unavailable, use the alternative procedure in the [Checklist for Upgrading vRealize Automation](#).
- Verify that the jdbc:postgresql database connection points to the external IP address of the master PostgreSQL node.
  - a On each vRealize Automation appliance, open a new command prompt.
  - b Navigate to `/etc/vcac/server.xml`, and back up `server.xml`.
  - c Open `server.xml`.
  - d If necessary, edit the `server.xml` file entry `jdbc:posgresql` that points to the Postgres database and point it to the external IP address of the master PostgreSQL node for external PostgreSQL or primary virtual appliance for embedded PostgreSQL.  
  
For example, `jdbc:postgresql://198.15.100.60:5432/vcac`
- 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 entered when you deployed the appliance.
- 2 Click **Services** and verify that each service, except `iaas-service`, is listed as REGISTERED.
- 3 Select **Update > Settings**.
- 4 Select one of the following:
  - **Use Default Repository.**
  - **Use CDRM Updates.**



- 5 Click **Save Settings**.
- 6 Select **Status**.
- 7 Click **Check Updates** to verify that an update is accessible.
- 8 (Optional) For instances of vRealize Automation appliance, click **Details** in the Appliance Version area to see information about the location of release notes.
- 9 Click **Install Updates**.
- 10 Click **OK**.

A message stating that the update is in progress appears.

- 11 (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 **System** 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, verify that each service, except iaas-service, is listed as REGISTERED, and select **Update > Status**.
  - c Click **Check Updates** and **Install Updates**.

- 12 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.

- 13 Click **Telemetry** in the appliance management console. Read the note about participation in the Customer Experience Improvement Program (CEIP) and select to join or not join the program.

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>.

For more information about the Customer Experience Improvement Program, see *Join or Leave the Customer Experience Improvement Program for vRealize Automation* in *Managing vRealize Automation*.

## What to do next

[Update Your Single Sign-On Password for VMware Identity Manager.](#)

## Update Your Single Sign-On Password for VMware Identity Manager

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

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

### Procedure

- 1 Log out of the vRealize Automation appliance management console, close the browser, open the browser again, and log back in.
- 2 Select **vRA Settings > SSO**.
- 3 Enter a new VMware Identity Manager password and click **Save Settings**.

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

The password is accepted.

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

- 4 Reboot the virtual appliance.
  - a Click the **System** tab.
  - b Click **Reboot** and confirm your selection.
- 5 Verify that all services are running.
  - a Log in to the vRealize Automation appliance management console.
  - b Click the **Services** tab on the console.
  - c Click the **Refresh** tab to monitor the progress of service startup.

You should see a minimum of 35 services.

- 6 Verify that all services are registered except `iaas-service`.

The release-management service does not start without a vRealize Code Stream license key.

### What to do next

[Update the License Key](#).

## Update the License Key

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

## 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 entered when the appliance was deployed.
- 3 Select **vRA Settings > Licensing**.

If the **Licensing** tab is not available, perform the following steps and repeat the procedure.

- a Log out of the management console.
  - b Clear your browser cache.
- 4 Enter your new license key in the **New License Key** text box.  
Endpoints and quotas are flagged according to your end-user license agreement (EULA).
  - 5 Click **Submit Key**.

## What to do next

[Migrate Identity Stores to VMware Identity Manager.](#)

# Migrate Identity Stores to VMware Identity Manager

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

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

---

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

---

## Procedure

- 1 [Create a Local User Account for Your Tenants](#)  
You must set up a tenant with a local user account and assign tenant administrator privileges to the local user account.
- 2 [Synchronize Users and Groups for an Active Directory Link](#)  
To import your users and groups into vRealize Automation using the Directories Management capability, you must connect to your Active Directory link.
- 3 [Migrate Multiple Tenant and IaaS Administrators](#)  
For each vRealize Automation tenant with Tenant or IaaS administrators, you must delete and restore each administrator manually.

## Create a Local User Account for Your Tenants

You must set up a tenant with a local user account and assign tenant administrator privileges to the local user account.

Repeat this procedure for each of your tenants.

### Prerequisites

Verify that you have set a new VMware Identity Manager password. See [Update Your Single Sign-On Password for VMware Identity Manager](#).

### Procedure

- 1 Log in to the vRealize Automation console with the default system administrator user name **administrator** and password.

The console location is `https://vra-appliance/vcac/`.

- 2 Click **Administration > Tenants**.

Click a tenant name, for example, for the default tenant, click **vsphere.local**.

- 3 Select the **Local Users** tab.

- 4 Click **New**.

- 5 Create a local user account.

You assign the tenant administrator role to this user. Verify that the local user name is a unique user for your tenant and will not conflict with your Active Directory users.

- 6 Click **OK**.

- 7 Click **Administrators**.

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

- 9 Click **Finish**.

- 10 Log out of the console.

### What to do next

[Synchronize Users and Groups for an Active Directory Link](#).

## Synchronize Users and Groups for an Active Directory Link

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

Perform this procedure for each of your tenants.

### Prerequisites

Verify that you have access privileges to the Active Directory.

### Procedure

- 1 Log in to the vRealize Automation console at: `https://vra-appliance/vcac/org/tenant_name`.
- 2 Select **Administration > Directories Management > Directories**.

- 3 Click **Add Directory** and select **Add Active Directory over LDAP/IWA**.
- 4 Enter your Active Directory account settings.

◆ Non-Native Active Directories

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

◆ Native Active Directories

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

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

- c To select the groups to synchronize, click **Select** and click **Next**.
  - d On the **Select Users** page, select the users to synchronize and click **Next**.
- 10 Review the users and groups are syncing to the directory, and click **Sync Directory**.
- The directory synchronization takes some time and runs in the background.
- 11 Select **Administration > Directories Management > Identity Providers**, and click your new identity provider.
- For example, **WorkspaceIDP\_\_1**.
- 12 Scroll to the bottom of the page, and update the value for the IdP Hostname property to point to the FQDN for the vRealize Automation load balancer.
- 13 Click **Save**.
- 14 Repeat steps 11–13 for each tenant and identity provider.
- 15 After you upgrade all vRealize Automation nodes, log in to each tenant and select **Administration > Directories Management > Identity Providers**.
- Each identity provider has all vRealize Automation connectors added to it.
- For example, if your deployment has two vRealize Automation appliances, the identity provider has two associated connectors.

## Migrate Multiple Tenant and IaaS Administrators

For each vRealize Automation tenant with Tenant or IaaS administrators, you must delete and restore each administrator manually.

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

### Prerequisites

Log in to the vRealize Automation console on the upgraded virtual appliance.

- 1 Open the vRealize Automation console on the upgraded virtual appliance using its fully qualified domain name, [https://va-hostname.domain\\_name/vcac](https://va-hostname.domain_name/vcac).
- For a distributed environment, open the console on the master virtual appliance.
- 2 Select the **vsphere.local** domain.
  - 3 Log in with the user name **administrator** and the password that you entered when you deployed the virtual appliance.

### Procedure

- 1 Select **Administration > Tenants**.
- 2 Click a tenant name.
- 3 Click **Administrators**.
- 4 Make a list of each tenant and IaaS administrator name and user name.

- 5 Point to each administrator and click the delete icon (✖) until you delete all administrators.
- 6 Click **Finish**.
- 7 On the Tenants page, click the tenant name again.
- 8 Click **Administrators**.
- 9 Enter the name of each user that you deleted in the appropriate search box and press Enter.
- 10 Click the name of the appropriate user from the search returns to add the user back as an administrator.

When you finish, the list of tenant administrators and IaaS administrators looks the same as the list of administrators you deleted.

- 11 Click **Finish**.

#### What to do next

Upgrade the secondary appliances. See [Install the Update on Additional vRealize Automation Appliances](#).

## Install the Update on Additional vRealize Automation Appliances

In a high-availability environment, the master virtual appliance is the node that runs the embedded PostgreSQL database 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](#).
- Verify that the jdbc:postgresql database connection points to the external IP address of the master PostgreSQL node.
  - a On the vRealize Automation appliance, open a new command prompt.
  - b Navigate to `/etc/vcac/server.xml`, and back up the `server.xml` file.
  - c Open the `server.xml` file.
  - d If necessary, edit the `server.xml` file entry `jdbc:postgresql` to indicate the PostgreSQL database that you want to use.
    - For an external PostgreSQL database, enter the external IP address of the master PostgreSQL node.

- For the embedded PostgreSQL database, enter the IP address of the master virtual appliance.

For example, jdbc:postgresql://198.15.100.60:5432/vcac

## Procedure

- 1 Open the vRealize Automation appliance management console for the upgrade.
  - a On each secondary vRealize Automation appliance, log in to vRealize Automation Appliance Management as **root** using the password you entered when you deployed the vRealize Automation appliance.
  - b Log in with the user name **root** and the password you entered when you deployed the appliance.
  - c Click **Update**.

- 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 manually resized Disk 1 GB to 50 GB, perform the following steps.
  - a When the system prompts you to reboot the virtual appliance, click **System** and click **Reboot**.  
During the reboot, the system adjusts the space on Disk 1 required for the update.
  - b After the system reboots, log out and log in again to the vRealize Automation appliance management console and select **Update > Status**.
  - c Click **Check Updates** and **Install Updates**.

- 9 To verify that upgrade is progressing successfully, open the log files.

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



- 10 When the update is finished, log out the vRealize Automation appliance management console, clear your Web browser cache, 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 After the virtual appliance has rebooted, log in to the replica vRealize Automation appliance management console.
- 13 Select **vRA Settings > Cluster**.
- 14 Enter the master vRealize Automation appliance user name and password.
- 15 Click **Join Cluster**.
- 16 Click **Services** and verify that each service, except iaas-service, is listed as REGISTERED.

**What to do next**

[Chapter 5 Upgrading the IaaS Server Components After Upgrading vRealize Automation.](#)

# Upgrading the IaaS Server Components After Upgrading vRealize Automation

# 5

After you upgrade vRealize Automation 6.2.5 to 7.3 or 7.3.1, a system administrator upgrades the IaaS server components, including the Microsoft SQL Server database.

You have two options for upgrading the IaaS server components.

- Use the automated IaaS upgrade shell script.
- Use the vRealize Automation 7.3 IaaS installer executable file.

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*. If this guide is unavailable, use the alternative procedure in [Checklist for Upgrading vRealize Automation](#).

This chapter includes the following topics:

- [Upgrade IaaS Components Using the Upgrade Shell Script After Upgrading vRealize Automation](#)
- [Upgrading IaaS Components Using the IaaS Installer Executable File After Upgrading vRealize Automation](#)
- [Restore Access to Built-In vRealize Orchestrator Control Center](#)

## Upgrade IaaS Components Using the Upgrade Shell Script After Upgrading vRealize Automation

Use the upgrade shell script to upgrade the IaaS Components after you update each vRealize Automation 6.2.5 appliance to 7.3 or 7.3.1.

The updated primary or master vRealize Automation appliance contains a shell script that you use to upgrade each IaaS node and component.

You can run the upgrade script by using the vSphere console for the virtual machine or by using an SSH console session. If you use the vSphere console, you avoid intermittent network connectivity problems that can break the execution of the script.

If you stop the script while the script is upgrading a component, the script runs until the upgrade is finished on the component. If any components on the node are not upgraded, you must run the script again.

When the upgrade finishes, you can review the upgrade result by opening the upgrade log file at `/usr/lib/vcac/tools/upgrade/upgrade.log`.

## Prerequisites

- Verify the successful update of all vRealize Automation appliances.
- If you reboot an IaaS server after you update all the vRealize Automation appliances, you must stop the IaaS Windows services. Before you upgrade the IaaS components, stop all the IaaS Windows services, except for the Management Agent service, on the server.
- Before you run the upgrade shell script on the master or primary vRealize Automation appliance node, verify that each service is REGISTERED.
  - a Go to the appliance 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 entered when the appliance was deployed.
  - c Click **Services**.
  - d Verify that each service, except the `iaas-service`, is REGISTERED.
- Upgrade the Management Agent on each vRealize Automation IaaS virtual machine.
  - a Open a browser and navigate to the VMware vRealize Automation IaaS Installation page on the vRealize Automation appliance using the fully qualified domain name: `https://virtual_appliance_host:5480/installer`.
  - b Click **Management Agent Installer**.

By default, the installer is downloaded to the Downloads folder.
  - c Log in to each vRealize Automation IaaS virtual machine, upgrade the Management Agent with the **Management Agent Installer** file.
- Verify that your primary IaaS Website node where the Model Manager data is installed has JAVA SE Runtime Environment 8, 64 bits, update 161 or later installed. After you install Java, you must set the environment variable, `JAVA_HOME`, to the new version.
- Log in to each IaaS Website node and verify that the creation date is earlier than the modified date in the `web.config` file. If the creation date for the `web.config` file is the same as or later than the modified date, perform the procedure in [Upgrade Fails for IaaS Website Component](#).
- To verify that each IaaS node has an upgraded IaaS Management Agent, perform these steps on each IaaS node.
  - a Log in to the vRealize Automation appliance management console.
  - b Select **vRA Settings > Cluster**.
  - c Expand the list of all installed components on each IaaS node, and locate the IaaS Management Agent.
  - d Verify that the Management Agent version is current.
- Verify that the IaaS Microsoft SQL Server database backup is accessible in case you must roll back.

- Delete all orphaned IaaS nodes. See [Delete Orphaned Nodes on vRealize Automation](#).
  - Verify that snapshots of the IaaS servers in your deployment are available.
- If the upgrade is unsuccessful, return to the snapshot and database backup and attempt another upgrade.

**Procedure**

- 1 Open a new console session on the primary or master vRealize Automation appliance node and log in with the root account.

If you plan to run the upgrade script with SSH, open an SSH console session.

- 2 Change directories to `/usr/lib/vcac/tools/upgrade/`.
- 3 At the prompt, run this command to create the `upgrade.properties` file.

```
./generate_properties
```

- 4 Open the `upgrade.properties` file and enter all the required values.

This table shows the required values, which vary depending on the environment. For example, on a node that contains a DEM worker or orchestrator, DEM credentials are required.

Required Value	Description	Credential Format	Example Value
web_username	User name for the primary Web node. Required only once.	Domain\User	iaasDomain\webuser
web_password	Password for the primary Web node. Required only once.	Password	pa\$\$w0rd!
dem_username	User name for the DEM worker or DEM orchestrator. Required for each node where a DEM component is installed.	Domain\User	iaasDomain\demuser
dem_password	Password for the DEM worker or DEM orchestrator. Required for each node where a DEM component is installed.	Password	pa\$\$w0rd!
agent_username	User name for an agent such as a vSphere agent. Required for each node where an agent component is installed.	Domain\User	iaasDomain\agent_user

Required Value	Description	Credential Format	Example Value
agent_password	Password for an agent such as a vSphere agent. Required for each node where an agent component is installed.	Password	pa\$\$w0rd!
vidm_admin_password	The VIDM administrator password. Required only when you upgrade from vRealize Automation 6.2.5.	vidm_password	pa\$\$w0rd!

For security reasons, the `upgrade.properties` file is removed when you run the upgrade shell script. The properties in the file are defined using the information for each IaaS component that comes through the IaaS Management Agents. It is important that all IaaS Management Agents are upgraded and healthy before running the `./generate_properties` or `./upgrade_from_62x` shell scripts. If any IaaS Management Agent has a problem when you run the upgrade shell script, see [Update Fails to Upgrade the Management Agent](#). To recreate the `upgrade.properties` file, repeat steps 2 and 3.

- 5 Run the upgrade script.
  - a At the command prompt, enter `./upgrade_from_62x`.
  - b Press Enter.

The script displays each IaaS node and all the components installed on it. The script validates each component before installing the upgrade. If there are incorrect values in the `upgrade.properties` file, the script fails.

The first IaaS server component can take about 30 minutes or longer to finish. During the upgrade, you see a message similar to `Upgrading server components for node web1-vra.mycompany.com`.

If the upgrade shell script is unsuccessful, review the `upgrade.log` file.

You can run the upgrade script again after you fix a problem. Before you run the upgrade script again, recreate the `upgrade.properties` file, open it, and enter all the required values.

- 6 (Optional) Enable automatic Manager Service failover. See [Enable Automatic Manager Service Failover After Upgrade](#).

#### What to do next

[Restore Access to Built-In vRealize Orchestrator Control Center](#).

## Upgrading IaaS Components Using the IaaS Installer Executable File After Upgrading vRealize Automation

You can use this alternative method to upgrade IaaS components after upgrading vRealize Automation 6.2.5 to 7.3 or 7.3.1.

## Download the IaaS Installer to Upgrade IaaS Components After Upgrading vRealize Automation

After upgrading from vRealize Automation 6.2.5 to 7.3 or 7.3.1, download the IaaS installer to the virtual 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. If you set services to Manual, the upgrade process fails.

---

### Prerequisites

- Verify that Microsoft .NET Framework 4.5.2 or later is installed on the IaaS installation virtual machine. You can download the .NET installer from the VMware vRealize Automation IaaS Installation page. If you update .NET to 4.5.2 after you shut down the services, the virtual machine might restart as part of the installation. When this happens, you must manually stop all IaaS services on the virtual machine except for 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 VMware vRealize Automation IaaS Installation page.  
  
For example, `https://vcac-va-hostname.domain.name:5480/installer`, where `vcac-va-hostname.domain.name` is the name of the primary or master vRealize Automation appliance node.
- 3 Click **IaaS installer**.
- 4 The installer file, `setup__vcac-va-hostname.domain.name@5480.exe`, is sent to the Downloads folder by default.

Do not change the filename. It is used to connect the installation to the vRealize Automation appliance.

### What to do next

- If you have a standalone vRealize Orchestrator, see [Upgrading Stand-Alone vRealize Orchestrator Appliance for Use with vRealize Automation](#).
- If you have an external vRealize Orchestrator appliance cluster, see [Upgrading External vRealize Orchestrator Appliance Cluster for Use with vRealize Automation](#).
- See [Upgrade the IaaS Components After Upgrading vRealize Automation](#).

## Upgrade the IaaS Components After Upgrading vRealize Automation

After upgrading vRealize Automation 6.2.5 to 7.3 or 7.3.1, 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 virtual machine that contains the IaaS components you want to upgrade. You cannot run the installer from an external location, except for the Microsoft SQL database, which also can be upgraded remotely from the Web node.

---

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 IaaS Websites

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. Begin with the one that has the Model Manager Data component installed.

If you are performing a manual external Microsoft SQL database upgrade, you must upgrade the external SQL before you upgrade the Web node. You can upgrade the external SQL remotely from the Web node.

### 2 Manager Services

Upgrade the active Manager Service before you upgrade the passive Manager Service.

If you do not have SSL encryption enabled in your SQL instance, deselect **SSL encryption** in the IaaS Upgrade configuration dialog box.

### 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 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 website and manager services on the same server, select both for update. The upgrade installer applies the updates in the proper order. You must complete the upgrade on one server before you begin an upgrade on another.

---

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

---

### Prerequisites

- Back up your existing vRealize Automation 6.2.5 environment.
- If you reboot an IaaS server after you update all the vRealize Automation appliances, you must stop the IaaS Windows services. Before you upgrade the IaaS components, stop all the IaaS Windows services, except for the Management Agent service, on the server.
- [Download the IaaS Installer to Upgrade IaaS Components After Upgrading vRealize Automation.](#)
- Verify that your primary IaaS Website node where the Model Manager data is installed has the proper Java version. You must have JAVA SE Runtime Environment 8, 64 bits, update 161 or later installed. After you install Java, set the environment variable, JAVA\_HOME, to the new version.
- Verify that the creation date is earlier than the modified date in the web.config file. If the creation date for the web.config file is the same as or later than the modified date, perform the procedure in [Upgrade Fails for IaaS Website Component.](#)
- If you are upgrading from vRealize Automation 6.2.5 and have an external Microsoft SQL database, you must have the proper Management Agent version. The Management Agent on the external database must be version 7.0 or later before you run the IaaS Website upgrade. You can check the Management Agent version in the Control Panel of your external SQL virtual machine. If the Management Agent is not version 7.0 or later, complete these steps to upgrade the Management Agent.
  - a Open a browser and navigate to the VMware vRealize Automation IaaS Installation page on the vRealize Automation appliance using the fully qualified domain name:  
`https://virtual_appliance_host:5480/installer.`
  - b Click **Management Agent Installer.**  
By default, the installer is downloaded to the Downloads folder.
  - c Log in to the external database, upgrade the Management Agent with the **Management Agent Installer** file.
- If you have a Common Components Catalog component installed, you must uninstall the component before you upgrade. For more information, see the *Common Components Catalog Installation Guide* or follow the steps provided in [Checklist for Upgrading vRealize Automation.](#)



**Procedure**

- 1 If you are using a load balancer, prepare your environment.
  - a Verify the IaaS Website node that contains the Model Manager data 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 IaaS Websites and non-primary Manager Services for load balancer traffic.
- 2 Right-click the `setup__vrealize-automation-appliance-FQDN@5480.exe` setup file and select **Run as administrator**.
- 3 Click **Next**.
- 4 Accept the license agreement and click **Next**.
- 5 Enter 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 entered 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
<b>If you are upgrading the Model Manager Data</b>	Select the <b>Model Manager Data</b> check box in the vCAC Server section. The check box is selected by default. Upgrade the Model Manager data only once. When you 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 the Model Manager data upgrade finishes, the Web servers function as usual.
<b>If you are not upgrading the Model Manager Data</b>	Unselect the <b>Model Manager Data</b> check box in the vCAC Server section.
<b>To preserve customized workflows as the latest version in your Model Manager Data</b>	If you are upgrading the Model Manager Data, select the <b>Preserve my latest workflow versions</b> check box in the Extensibility Workflows section. The check box is selected by default. Customized workflows are always preserved. Selecting the check box determines version order only. If you have customized workflows in the Model Manager, select this option so that the most recent workflow remains 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. The most recent version before upgrade becomes the second most recent. For information about vRealize Automation Designer, see <i>Life Cycle Extensibility</i> .
<b>If you are upgrading a Distributed Execution Manager or a proxy agent</b>	Enter the credentials for the administrator account in the Service Account section. All the services that you upgrade run under this account.

Option	Action
<b>To specify your Microsoft SQL Server database</b>	<p>If you upgrade the Model Manager Data, enter the names of the database server and database instance in the <b>Server</b> text box. Enter a fully qualified domain name (FQDN) for the database server name in the <b>Database name</b> text box.</p> <p>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.</p> <p>When upgrading the manager nodes, the MSSQL SSL option is selected by default. If your database does not use SSL, deselect <b>Use SSL for database connection</b>.</p>

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 stated 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 the selected components are upgraded to the new release.

**What to do next**

- [Restore Access to Built-In vRealize Orchestrator Control Center](#).
- If your deployment uses a load balancer, upgrade each load balancer node to use vRealize Automation health checks. Re-enable load balancer traffic for any unconnected nodes. If your previous deployment used a load balanced embedded PostgreSQL database, disable all nodes in the PostgreSQL pool because they are not needed. Delete the pool at a convenient time.

For more information, see *vRealize Automation Load Balancing*.

- (Optional) Enable automatic Manager Service failover. See [Enable Automatic Manager Service Failover After Upgrade](#).

## Restore Access to Built-In vRealize Orchestrator Control Center

After you upgrade the IaaS server components, you must restore access to the vRealize Orchestrator.

When you upgrade to vRealize Automation 7.3, you need to perform this procedure to accommodate the new Role-Based Access Control feature. This procedure is written for a high-availability environment.

## Prerequisites

Make a snapshot of your vRealize Automation environment.

## Procedure

- 1 Log in to the vRealize Automation appliance management console as root by using the appliance host fully qualified domain name, `https://va-hostname.domain.name:5480`.
- 2 Select **vRA Settings > Database**.
- 3 Identify the master and replica nodes.
- 4 On each replica node, open an SSH session, log in as administrator, and run this command:  

```
service vco-server stop && service vco-configurator stop
```
- 5 On the master node, open an SSH session, log in as administrator, and run this command:  

```
rm /etc/vco/app-server/vco-registration-id
```
- 6 On the master node, change directories to `/etc/vco/app-server/`.
- 7 Open the `sso.properties` file.
- 8 If the property name `com.vmware.o11n.sso.admin.group.name` contains spaces or any other Bash-related characters that can be accepted as a special character in a Bash command such as a hyphen (`'`) or a dollar sign (`$`), complete these steps.
  - a Copy the line with the `com.vmware.o11n.sso.admin.group.name` property and enter `AdminGroup` for the value.
  - b Add `#` to the beginning of the original line with the `com.vmware.o11n.sso.admin.group.name` property to comment the line.
  - c Save and close the `sso.properties` file.
- 9 Run this command:  

```
vcac-vami vco-service-reconfigure
```
- 10 If you completed step 8, open the `sso.properties` file and complete these steps.
  - a Remove the `#` from the beginning of the original line with the `com.vmware.o11n.sso.admin.group.name` property to uncomment the line.
  - b Remove the copy of the line with the `com.vmware.o11n.sso.admin.group.name` property.
  - c Save and close the `sso.properties` file.
- 11 Run this command to restart the `vco-server` service:  

```
service vco-server restart
```
- 12 Run this command to restart the `vco-configurator` service:  

```
service vco-configurator restart
```

- 13 In the vRealize Automation appliance management console, click **Services** and wait until all the services in the master node are REGISTERED.
- 14 When all the services are registered, join the vRealize Automation replica nodes to the vRealize Automation cluster to synchronize the vRealize Orchestrator configuration. For information, see [Reconfigure the Built-In vRealize Orchestrator to Support High Availability](#).

**What to do next**

[Chapter 6 Upgrading vRealize Orchestrator After Upgrading from vRealize Automation](#).

# Upgrading vRealize Orchestrator After Upgrading from vRealize Automation

# 6

You must upgrade your vRealize Orchestrator instance when you upgrade from vRealize Automation 6.2.5 to 7.3 or 7.3.1.

With the release of vRealize Orchestrator 7.3, you have two options for upgrading vRealize Orchestrator after a successful upgrade to vRealize Automation 7.3.

- You can migrate your existing external vRealize Orchestrator server to the embedded vRealize Orchestrator included in vRealize Automation 7.3 or 7.3.1.
- You can upgrade your existing standalone or clustered vRealize Orchestrator server to work with vRealize Automation 7.3 or 7.3.1.

---

**Note** It is important to keep vRealize Automation and vRealize Orchestrator on the same version: 7.3.0 with 7.3.0 or 7.3.1 with 7.3.1.

---

This chapter includes the following topics:

- [Migrating an External vRealize Orchestrator Server to vRealize Automation](#)
- [Upgrading Stand-Alone vRealize Orchestrator Appliance for Use with vRealize Automation](#)
- [Upgrading External vRealize Orchestrator Appliance Cluster for Use with vRealize Automation](#)

## Migrating an External vRealize Orchestrator Server to vRealize Automation

You can migrate your existing external vRealize Orchestrator server to a vRealize Orchestrator instance embedded in vRealize Automation 7.3 or 7.3.1.

You can deploy vRealize Orchestrator as an external server instance and configure vRealize Automation to work with that external instance, or you can configure and use the vRealize Orchestrator server that is included in the vRealize Automation appliance.

VMware recommends that you migrate your external vRealize Orchestrator to the Orchestrator server that is built into vRealize Automation. The migration from an external to embedded Orchestrator provides the following benefits:

- Reduces the total cost of ownership.
- Simplifies the deployment model.

- Improves the operational efficiency.

**Note** Consider using the external vRealize Orchestrator in the following cases:

- Multiple tenants in the vRealize Automation environment
- Geographically dispersed environment
- Workload handling
- Use of specific plug-ins, such as older versions of the Site Recovery Manager plug-in

## Control Center Differences Between External and Embedded Orchestrator

Some of the menu items that are available in Control Center of an external vRealize Orchestrator are not included in the default Control Center view of an embedded Orchestrator instance.

In Control Center of the embedded Orchestrator server, a few options are hidden by default.

Menu Item	Details
Licensing	The embedded Orchestrator is preconfigured to use vRealize Automation as a license provider.
Export/Import Configuration	The embedded Orchestrator configuration is included in the exported vRealize Automation components.
Configure Database	The embedded Orchestrator uses the database that is used by vRealize Automation.
Customer Experience Improvement Program	You can join the Customer Experience Improvement Program (CEIP) from the vRealize Automation appliance management interface.  See <i>The Customer Experience Improvement Program</i> in <i>Managing vRealize Automation</i> .

Another options that are hidden from the default Control Center view are the **Host address** text box and the **UNREGISTER** button on the **Configure Authentication Provider** page.

**Note** To see the full set of Control Center options in vRealize Orchestrator that is built into vRealize Automation, you must access the advanced Orchestrator Management page at [https://vra-va-hostname.domain.name\\_or\\_load\\_balancer\\_address:8283/vco-controlcenter/#/?advanced](https://vra-va-hostname.domain.name_or_load_balancer_address:8283/vco-controlcenter/#/?advanced) and click the F5 button on the keyboard to refresh the page.

## Migrate an External vRealize Orchestrator on Windows to vRealize Automation

After you upgrade vRealize Automation 6.2.5 to 7.3 or 7.3.1, you can migrate your existing external Orchestrator 6.x installed on Windows to the Orchestrator server that is built into vRealize Automation 7.3 or 7.3.1.

**Note** If you have a distributed vRealize Automation environment with multiple vRealize Automation appliance nodes, perform the migration procedure only on the primary vRealize Automation node.

## Prerequisites

- Successful migration to vRealize Automation 7.3 or 7.3.1.
- Stop the Orchestrator server service on the external Orchestrator.
- Back up the database, including the database schema, of the external Orchestrator server.

## Procedure

- 1 Download the migration tool from the target Orchestrator server.
  - a Log in to the vRealize Automation appliance over SSH as **root**.
  - b Download the `migration-tool.zip` archive that is located in the `/var/lib/vco/downloads` directory.
- 2 Export the Orchestrator configuration from the source Orchestrator server.
  - a Set the `PATH` environment variable by pointing it to the `bin` folder of the Java JRE installed with Orchestrator.
  - b Upload the migration tool to the Windows server, on which the external Orchestrator is installed.
  - c Extract the downloaded archive in the Orchestrator install folder.

The default path to the Orchestrator install folder in a Windows-based installation is `C:\Program Files\VMware\Orchestrator`.
  - d Run the Windows command prompt as administrator and navigate to the `bin` folder in the Orchestrator install folder.

By default, the path to the `bin` folder is `C:\Program Files\VMware\Orchestrator\migration-cli\bin`.
  - e Run the export command from the command line.

```
C:\Program Files\VMware\Orchestrator\migration-cli\bin\vro-migrate.bat export
```

This command combines the VMware vRealize Orchestrator configuration files and plug-ins into an export archive.

The archive is created in the same folder as the `migration-cli` folder.

- 3 Migrate the exported configuration to the Orchestrator server that is built into vRealize Automation 7.3.
  - a Upload the exported configuration file to the `/usr/lib/vco/tools/configuration-cli/bin` directory on the vRealize Automation appliance.
  - b Under the `/usr/lib/vco/tools/configuration-cli/bin` directory, change the ownership of the exported Orchestrator configuration file.

```
chown vco:vco orchestrator-config-export-orchestrator_ip_address-date_hour.zip
```

- c Import the Orchestrator configuration file to the built-in vRealize Orchestrator server, by running the `vro-configure` script with the `import` command.

```
./vro-configure.sh import --skipDatabaseSettings --skipLicense --skipSettings --skipSslCertificate --notForceImportPlugins --notRemoveMissingPlugins --skipTrustStore --path orchestrator-config-export-orchestrator_appliance_ip-date_hour.zip
```

- 4 Migrate the external Orchestrator database to the embedded one in vRealize Automation.
  - a Log in to the vRealize Automation appliance over SSH as `root`.
  - b Navigate to the `/usr/lib/vco/tools/configuration-cli/bin` directory.
  - c Run the following command to migrate the database:

```
./vro-configure.sh db-migrate --sourceJdbcUrl JDBC_connection_URL --sourceDbUsername database_user --sourceDbPassword database_user_password
```

**Note** Enclose passwords that contain special characters in single quotation marks.

The `JDBC_connection_URL` depends on the type of database that you use.

```
PostgreSQL: jdbc:postgresql://host:port/database_name
```

```
MSSQL: jdbc:jtds:sqlserver://host:port/database_name\; if using SQL authentication and MSSQL:
jdbc:jtds:sqlserver://host:port/database_name\;domain=domain\;useNTLMv2=TRUE if using Windows authentication.
```

```
Oracle: jdbc:oracle:thin:@host:port:database_name
```

The default database login information is:

<code>database_name</code>	vmware
<code>database_user</code>	vmware
<code>database_user_password</code>	vmware



- 5 If you migrated vRealize Automation instead of upgrading it, delete the trusted Single Sign-On certificates from the database of the embedded Orchestrator instance.

```
sudo -u postgres -i -- /opt/vmware/vpostgres/current/bin/psql vcac -c "DELETE FROM vmo_keystore WHERE id='cakeystore-id';"
```

You successfully migrated an external vRealize Orchestrator 6.x installed on Windows to a vRealize Orchestrator instance embedded in vRealize Automation 7.3.

#### What to do next

Set up the built-in vRealize Orchestrator server. See [Configure the Built-In vRealize Orchestrator Server](#).

## Migrate an External vRealize Orchestrator 6.x Virtual Appliance to vRealize Automation 7.3 or 7.3.1

After you upgrade your vRealize Automation from version 6.x to version 7.3 or 7.3.1, you can migrate your existing external Orchestrator 6.x Virtual Appliance to the Orchestrator server that is built into vRealize Automation 7.3 or 7.3.1.

---

**Note** If you have a distributed vRealize Automation environment with multiple vRealize Automation appliance nodes, perform the migration procedure only on the primary vRealize Automation node.

---

#### Prerequisites

- Successful migration to vRealize Automation 7.3 or 7.3.1.
- Stop the Orchestrator server service on the external Orchestrator.
- Back up the database, including the database schema, of the external Orchestrator server.

#### Procedure

- 1 Download the migration tool from the target Orchestrator server to the source Orchestrator.
  - a Log in to the vRealize Orchestrator 6.x Virtual Appliance over SSH as **root**.
  - b Under the `/var/lib/vco` directory, run the `scp` command to download the `migration-tool.zip` archive.

```
scp root@vra-va-hostname.domain.name:/var/lib/vco/downloads/migration-tool.zip ./
```

- c Run the `unzip` command to extract the migration tool archive.

```
unzip migration-tool.zip
```

## 2 Export the Orchestrator configuration from the source Orchestrator server.

- a In the `/var/lib/vco/migration-cli/bin` directory, run the `export` command.

```
./vro-migrate.sh export
```

This command combines the VMware vRealize Orchestrator configuration files and plug-ins into an export archive.

An archive with file name `orchestrator-config-export-orchestrator_ip_address-date_hour.zip` is created in the `/var/lib/vco` folder.

## 3 Migrate the exported configuration to the Orchestrator server that is built into vRealize Automation 7.3.

- a Log in to the vRealize Automation appliance over SSH as **root**.
- b Under the `/usr/lib/vco/tools/configuration-cli/bin` directory, run the `scp` command to download the exported configuration archive.

```
scp root@orchestrator_ip_or_DNS_name:/var/lib/vco/orchestrator-config-export-orchestrator_ip_address-date_hour.zip ./
```

- c Change the ownership of the exported Orchestrator configuration file.

```
chown vco:vco orchestrator-config-export-orchestrator_ip_address-date_hour.zip
```

- d Stop the Orchestrator server service and the Control Center service of the built-in vRealize Orchestrator server.

```
service vco-server stop && service vco-configurator stop
```

- e Import the Orchestrator configuration file to the built-in vRealize Orchestrator server, by running the `vro-configure` script with the `import` command.

```
./vro-configure.sh import --skipDatabaseSettings --skipLicense --skipSettings --skipSslCertificate --notForceImportPlugins --notRemoveMissingPlugins --skipTrustStore --path orchestrator-config-export-orchestrator_appliance_ip-date_hour.zip
```

## 4 If the external Orchestrator server from which you want to migrate uses the built-in PostgreSQL database, edit its database configuration files.

- a In the `/var/vmware/vpostgres/current/pgdata/postgresql.conf` file, uncomment the `listen_addresses` line.
- b Set the values of `listen_addresses` to a wildcard (\*).

```
listen_addresses = '*'
```

- c Append a line to the `/var/vmware/vpostgres/current/pgdata/pg_hba.conf` file.

```
host all all vra-va-ip-address/32 md5
```

**Note** The `pg_hba.conf` file requires using a CIDR prefix format instead on an IP address and a subnet mask.

- d Restart the PostgreSQL server service.

```
service vpostgres restart
```

**5** Migrate the external Orchestrator database to the embedded one in vRealize Automation.

- a Log in to the vRealize Automation appliance over SSH as **root**.
- b Navigate to the `/usr/lib/vco/tools/configuration-cli/bin` directory.
- c Run the following command to migrate the database:

```
./vro-configure.sh db-migrate --sourceJdbcUrl JDBC_connection_URL --sourceDbUsername database_user --sourceDbPassword database_user_password
```

**Note** Enclose passwords that contain special characters in single quotation marks.

The `JDBC_connection_URL` depends on the type of database that you use.

PostgreSQL: `jdbc:postgresql://host:port/database_name`

MSSQL: `jdbc:jtds:sqlserver://host:port/database_name\;` if using SQL authentication and MSSQL: `jdbc:jtds:sqlserver://host:port/database_name\;domain=domain\;useNTLMv2=TRUE` if using Windows authentication.

Oracle: `jdbc:oracle:thin:@host:port:database_name`

The default database login information is:

<code>database_name</code>	vmware
<code>database_user</code>	vmware
<code>database_user_password</code>	vmware

- 6** If you migrated vRealize Automation instead of upgrading it, delete the trusted Single Sign-On certificates from the database of the embedded Orchestrator instance.

```
sudo -u postgres -i -- /opt/vmware/vpostgres/current/bin/psql vcac -c "DELETE FROM vmo_keystore WHERE id='cakeystore-id';"
```

- 7 Revert to the default configuration of the `postgresql.conf` and the `pg_hba.conf` file.
  - a Restart the PostgreSQL server service.

You successfully migrated an external vRealize Orchestrator 6.x Virtual Appliance to a vRealize Orchestrator instance embedded in vRealize Automation 7.3.

#### What to do next

Set up the built-in vRealize Orchestrator server. See [Configure the Built-In vRealize Orchestrator Server](#).

## Configure the Built-In vRealize Orchestrator Server

After you export the configuration of an external Orchestrator server and import it to vRealize Automation 7.3, you must configure the Orchestrator server that is built into vRealize Automation.

#### Prerequisites

Migrate the configuration from the external to the internal vRealize Orchestrator.

#### Procedure

- 1 Log in to the vRealize Automation appliance over SSH as **root**.
- 2 Start the Control Center service and the Orchestrator server service of the built-in vRealize Orchestrator server.

```
service vco-configurator start && service vco-server start
```

- 3 Log in to Control Center of the built-in Orchestrator server as an **administrator**.

---

**Note** If you migrate from an external vRealize Orchestrator 7.3 instance, skip to step 5.

---

- 4 Verify that Orchestrator is configured properly at the **Validate Configuration** page in Control Center.
- 5 If the external Orchestrator was configured to work in cluster mode, reconfigure the Orchestrator cluster in vRealize Automation.
  - a Go to the advanced **Orchestrator Cluster Management** page, at `https://vra-va-hostname.domain.name_or_load_balancer_address:8283/vco-controlcenter/#/control-app/ha?remove-nodes`.

---

**Note** If the **Remove** check boxes next the existing nodes in the cluster do not appear, you must refresh the browser page by clicking the F5 button on the keyboard.

---

- b Select the check boxes next to the external Orchestrator nodes and click **Remove** to remove them from the cluster.

- c To exit the advanced cluster management page, delete the `remove-nodes` string from the URL and refresh the browser page by clicking the F5 button on the keyboard.
  - d At the **Validate Configuration** page in Control Center, verify that Orchestrator is configured properly.
- 6 (Optional) Under the **Package Signing Certificate** tab on the **Certificates** page, generate a new package signing certificate.
  - 7 (Optional) Change the values for **Default tenant** and **Admin group** on the **Configure Authentication Provider** page.
  - 8 Verify that the `vco-server` service appears as REGISTERED under the **Services** tab in the vRealize Automation appliance management console.
  - 9 Select the `vco` services of the external Orchestrator server and click **Unregister**.

#### What to do next

- Import any certificates that were trusted in the external Orchestrator server to the trust store of the built-in Orchestrator.
- Join the vRealize Automation replica nodes to the vRealize Automation cluster to synchronize the Orchestrator configuration.

For more information, see *Reconfigure the Target Embedded vRealize Orchestrator to Support High Availability* in *Installing or Upgrading vRealize Automation*.

---

**Note** The vRealize Orchestrator instances are automatically clustered and available for use.

---

- Restart the `vco-configurator` service on all nodes in the cluster.
- Update the vRealize Orchestrator endpoint to point to the migrated built-in Orchestrator server.
- Add the vRealize Automation host and the IaaS host to the inventory of the vRealize Automation plug-in, by running the `Add a vRA host` and `Add the IaaS host of a vRA host` workflows.

## Upgrading Stand-Alone vRealize Orchestrator Appliance for Use with vRealize Automation

If you maintain a stand-alone vRealize Orchestrator appliance for use with vRealize Automation, you must upgrade the stand-alone appliance when you upgrade vRealize Automation from 6.2.5 to 7.3 or 7.3.1.

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

If you are upgrading a vRealize Orchestrator appliance cluster, see [Upgrading External vRealize Orchestrator Appliance Cluster for Use with vRealize Automation](#).

#### Prerequisites

- [Install the Update on the vRealize Automation 6.2.5 Appliance](#).

- Upgrade IaaS components as described in [Chapter 5 Upgrading the IaaS Server Components After Upgrading vRealize Automation](#).
- Unmount all network file systems. See *vSphere Virtual Machine Administration* in the vSphere documentation.
- Increase the memory of the vSphere Orchestrator appliance to at least 6 GB. See *vSphere Virtual Machine Administration* in the vSphere documentation.
- Take a snapshot of the vSphere Orchestrator virtual machine. See *vSphere Virtual Machine Administration* in the vSphere documentation.
- If you use an external database, back up the database.
- If you use the preconfigured PostgreSQL database in vSphere Orchestrator, back up the database by using the **Export Database** menu in the vSphere Control Center.

#### Procedure

- 1 Use one of the documented methods to upgrade your stand-alone vRealize Orchestrator.
  - [Upgrade Orchestrator Appliance by Using the Default VMware Repository](#).
  - [Upgrade Orchestrator Appliance by Using an ISO Image](#).
  - [Upgrade Orchestrator Appliance by Using a Specified Repository](#).
- 2 From the Control Center, upgrade the vRealize Automation NSX plugin.

## Upgrade Orchestrator Appliance by Using the Default VMware Repository

You can configure Orchestrator to download the upgrade package from the default VMware repository.

#### Prerequisites

- Unmount all network file systems. For more information, see the *vSphere Virtual Machine Administration* documentation.
- Increase the memory of the Orchestrator Appliance to at least 6 GB. For more information, see the *vSphere Virtual Machine Administration* documentation.
- Make sure that the root partition of the Orchestrator Appliance has at least 3 GB of available free space. For more information on increasing the size of a disk partition, see KB 1004071: <http://kb.vmware.com/kb/1004071>.
- Take a snapshot of the Orchestrator virtual machine. For more information, see the *vSphere Virtual Machine Administration* documentation.
- If you use an external database, back up the database.
- If you use the preconfigured in Orchestrator PostgreSQL database, back up the database by using the **Export Database** menu in Control Center.

- If you use vSphere as an authentication provider and the Platform Services Controller is external to the vCenter Server, you must configure Orchestrator to connect to the fully qualified domain name or IP address of the Platform Services Controller instance that contains the vCenter Single Sign-On.
- Import to Orchestrator manually the certificates of all Platform Services Controllers that share the same vCenter Single Sign-On domain. For more information, see *Import a Trusted Certificate Through Control Center* in *Installing and Configuring VMware vRealize Orchestrator*.

### Procedure

- 1 Go to the Virtual Appliance Management Interface (VAMI) at [https://orchestrator\\_server:5480](https://orchestrator_server:5480) and log in as **root**.
- 2 On the **Update** tab, click **Settings**.  
The radio button next to the **Use Default Repository** option is selected.
- 3 On the **Status** page, click **Check Updates**.
- 4 If any updates are available, click **Install Updates**.
- 5 Accept the VMware End-User License Agreement and confirm that you want to install the update.
- 6 To complete the update, restart the Orchestrator Appliance.
  - a Log in again to the to the Virtual Appliance Management Interface (VAMI) as **root**.
- 7 (Optional) On the **Update** tab, verify that the latest version of the Orchestrator Appliance is successfully installed.
- 8 Log in to Control Center as **root**.
- 9 If you plan to create a cluster of Orchestrator instances, reconfigure the hosts settings.
  - a On the **Host Settings** page in Control Center, click **CHANGE**.
  - b Enter the host name of the load balancer server instead of the vRealize Orchestrator appliance name.
- 10 Reconfigure the authentication.
  - a If before the upgrade, the Orchestrator server was configured to use **LDAP** or **SSO (legacy)** as an authentication method, configure **vSphere** or **vRealize Automation** as an authentication provider.
  - b If the authentication is already set to **vSphere** or **vRealize Automation**, unregister the settings and register them again.

You successfully upgraded the Orchestrator Appliance.

### What to do next

Verify that Orchestrator is configured properly at the **Validate Configuration** page in Control Center.

## Upgrade Orchestrator Appliance by Using an ISO Image

You can configure Orchestrator to download the upgrade package from an ISO image file mounted to the CD-ROM drive of the appliance.

### Prerequisites

- Unmount all network file systems. For more information, see the *vSphere Virtual Machine Administration* documentation.
- Increase the memory of the Orchestrator Appliance to at least 6 GB. For more information, see the *vSphere Virtual Machine Administration* documentation.
- Make sure that the root partition of the Orchestrator Appliance has at least 3 GB of available free space. For more information on increasing the size of a disk partition, see KB 1004071: <http://kb.vmware.com/kb/1004071>.
- Take a snapshot of the Orchestrator virtual machine. For more information, see the *vSphere Virtual Machine Administration* documentation.
- If you use an external database, back up the database.
- If you use the preconfigured in Orchestrator PostgreSQL database, back up the database by using the **Export Database** menu in Control Center.
- If you use vSphere as an authentication provider and the Platform Services Controller is external to the vCenter Server, you must configure Orchestrator to connect to the fully qualified domain name or IP address of the Platform Services Controller instance that contains the vCenter Single Sign-On.
- Import to Orchestrator manually the certificates of all Platform Services Controllers that share the same vCenter Single Sign-On domain. For more information, see *Import a Trusted Certificate Through Control Center* in *Installing and Configuring VMware vRealize Orchestrator*.

### Procedure

- 1 Download the `VMware-vRO-Appliance-version-build_number-updaterepo.iso` archive from the official VMware download site.
- 2 Connect the CD-ROM drive of the Orchestrator Appliance virtual machine. For more information, see the *vSphere Virtual Machine Administration* documentation.
- 3 Mount the ISO image file to the CD-ROM drive of the appliance. For more information, see the *vSphere Virtual Machine Administration* documentation.
- 4 Go to the Virtual Appliance Management Interface (VAMI) at `https://orchestrator_server:5480` and log in as **root**.
- 5 On the **Update** tab, click **Settings**.
- 6 Select the radio button next to the **Use CD-ROM updates** option.
- 7 Return to the **Status** page.

The version of the available upgrade is displayed.



- 8 Click **Install Updates**.
- 9 Accept the VMware End-User License Agreement and confirm that you want to install the update.
- 10 To complete the update, restart the Orchestrator Appliance.
  - a Log in again to the to the Virtual Appliance Management Interface (VAMI) as **root**.
- 11 (Optional) On the **Update** tab, verify that the latest version of the Orchestrator Appliance is successfully installed.
- 12 Log in to Control Center as **root**.
- 13 If you plan to create a cluster of Orchestrator instances, reconfigure the hosts settings.
  - a On the **Host Settings** page in Control Center, click **CHANGE**.
  - b Enter the host name of the load balancer server instead of the vRealize Orchestrator appliance name.
- 14 Reconfigure the authentication.
  - a If before the upgrade, the Orchestrator server was configured to use **LDAP** or **SSO (legacy)** as an authentication method, configure **vSphere** or **vRealize Automation** as an authentication provider.
  - b If the authentication is already set to **vSphere** or **vRealize Automation**, unregister the settings and register them again.

You successfully upgraded the Orchestrator Appliance.

#### What to do next

Verify that Orchestrator is configured properly at the **Validate Configuration** page in Control Center.

## Upgrade Orchestrator Appliance by Using a Specified Repository

You can configure Orchestrator to use a local repository, on which you uploaded the upgrade archive.

#### Prerequisites

- Unmount all network file systems. For more information, see the *vSphere Virtual Machine Administration* documentation.
- Increase the memory of the Orchestrator Appliance to at least 6 GB. For more information, see the *vSphere Virtual Machine Administration* documentation.
- Make sure that the root partition of the Orchestrator Appliance has at least 3 GB of available free space. For more information on increasing the size of a disk partition, see KB 1004071: <http://kb.vmware.com/kb/1004071>.
- Take a snapshot of the Orchestrator virtual machine. For more information, see the *vSphere Virtual Machine Administration* documentation.
- If you use an external database, back up the database.

- If you use the preconfigured in Orchestrator PostgreSQL database, back up the database by using the **Export Database** menu in Control Center.
- If you use vSphere as an authentication provider and the Platform Services Controller is external to the vCenter Server, you must configure Orchestrator to connect to the fully qualified domain name or IP address of the Platform Services Controller instance that contains the vCenter Single Sign-On.
- Import to Orchestrator manually the certificates of all Platform Services Controllers that share the same vCenter Single Sign-On domain. For more information, see *Import a Trusted Certificate Through Control Center* in *Installing and Configuring VMware vRealize Orchestrator*.

### Procedure

- 1 Prepare the local repository for upgrades.
  - a Install and configure a local Web server.
  - b Download the `VMware-vRO-Appliance-version-build_number-updaterepo.zip` archive from the official VMware download site.
  - c Extract the .ZIP archive to the local repository.
- 2 Go to the Virtual Appliance Management Interface (VAMI) at `https://orchestrator_server:5480` and log in as **root**.
- 3 On the **Update** tab, click **Settings**.
- 4 Select the radio button next to the **Use Specified Repository** option.
- 5 Enter the URL address of the local repository by pointing to the `Update_Repo` directory.  
`http://local_web_server:port/build/mts/release/bora-build_number/publish/exports/Update_Repo`
- 6 If the local repository requires authentication, enter user name and password.
- 7 Click **Save Settings**.
- 8 On the **Status** page, click **Check Updates**.
- 9 If any updates are available, click **Install Updates**.
- 10 Accept the VMware End-User License Agreement and confirm that you want to install the update.
- 11 To complete the update, restart the Orchestrator Appliance.
  - a Log in again to the to the Virtual Appliance Management Interface (VAMI) as **root**.
- 12 (Optional) On the **Update** tab, verify that the latest version of the Orchestrator Appliance is successfully installed.
- 13 Log in to Control Center as **root**.

- 14 If you plan to create a cluster of Orchestrator instances, reconfigure the hosts settings.
  - a On the **Host Settings** page in Control Center, click **CHANGE**.
  - b Enter the host name of the load balancer server instead of the vRealize Orchestrator appliance name.
- 15 Reconfigure the authentication.
  - a If before the upgrade, the Orchestrator server was configured to use **LDAP** or **SSO (legacy)** as an authentication method, configure **vSphere** or **vRealize Automation** as an authentication provider.
  - b If the authentication is already set to **vSphere** or **vRealize Automation**, unregister the settings and register them again.

You successfully upgraded the Orchestrator Appliance.

#### What to do next

Verify that Orchestrator is configured properly at the **Validate Configuration** page in Control Center.

## Upgrading External vRealize Orchestrator Appliance Cluster for Use with vRealize Automation

If you use an vRealize Orchestrator appliance cluster with vRealize Automation, you must upgrade the Orchestrator appliance cluster to version 7.3 or 7.3.1 by upgrading a single instance and joining newly installed 7.3 or 7.3.1 nodes to the upgraded instance.

#### Prerequisites

- [Install the Update on the vRealize Automation 6.2.5 Appliance.](#)
- Upgrade IaaS components. See [Chapter 5 Upgrading the IaaS Server Components After Upgrading vRealize Automation.](#)
- Set up a load balancer to distribute traffic among multiple instances of vRealize Orchestrator. See the [vRealize Orchestrator Load Balancing Configuration Guide.](#)
- Take a snapshot of all vRealize Orchestrator server nodes.
- Back up the vRealize Orchestrator shared database.

#### Procedure

- 1 From the Control Center, upgrade the vRealize Automation NSX plugin.
- 2 Stop the `vco-server` and `vco-configurator` Orchestrator services on all cluster nodes.
- 3 Upgrade only one of the Orchestrator server instances in your cluster using one of the documented procedures.

- 4 Deploy a new Orchestrator appliance on version 7.3.
  - a Configure the new node with the network settings of an existing not upgraded instance that is part of the cluster.
- 5 Access Control Center of the second node to start the configuration wizard.
  - a Navigate to `https://your_orchestrator_server_IP_or_DNS_name:8283/vco-controlcenter`.
  - b Log in as **root** with the password you entered during OVA deployment.
- 6 Select the **Clustered Orchestrator** deployment type.

By choosing this type, you select to join the node to an existing Orchestrator cluster.
- 7 In the **Hostname** text box, enter the host name or IP address of the first Orchestrator server instance.

---

**Note** This must be the local IP or host name of the Orchestrator instance, to which you are joining the second node. You must not use the load balancer address.

---

- 8 In the **User name** and **Password** text boxes, enter the root credentials of the first Orchestrator server instance.
  - 9 Click **Join**. The Orchestrator instance clones the configuration of the node, to which it joins.

The Orchestrator server service of both nodes restart automatically.
  - 10 Access Control Center of the upgraded Orchestrator cluster through the load balancer address and log in as an **administrator**.
  - 11 On the **Orchestrator Cluster Management** page, make sure that the **Active Configuration Fingerprint** and the **Pending Configuration Fingerprint** strings on all nodes in the cluster match.
- 
- Note** You might need to refresh the page several times until the two strings match.
- 

- 12 Verify that the vRealize Orchestrator cluster is configured properly by opening the **Validate Configuration** page in Control Center.
- 13 (Optional) Repeat steps 3 through 8 for each additional node in the cluster.
- 14 From the Control Center, upgrade the vRealize Automation NSX plugin.

You have successfully upgraded the Orchestrator cluster.

#### What to do next

[Chapter 8 Enable Your Load Balancers.](#)

# Add Users or Groups to an Active Directory Connection

# 7

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. The speed of the data transport is limited by Active Directory capabilities. As a result, actions can take a long time depending on the number of groups and users that are added. To minimize problems, limit the groups and users to only the groups and users required for a vRealize Automation action. If problems occur, close unneeded applications and verify that your deployment has appropriate memory allocated to Active Directory. If problems continue, increase the Active Directory memory allocation. For deployments with large numbers of users and groups, you might need to increase the Active Directory memory allocation to as much as 24 GB.

When you sync a vRealize Automation deployment with a many users and groups, there might be a delay before the Log details are available. The time stamp on the log file can differ from the completed time displayed on the console.

If members of a group are not in the Users list, when you add the group from Active Directory, the members are added to the list. When you sync a group, any users that do not have Domain Users as their primary group in Active Directory are not synced.

---

**Note** You cannot cancel a synchronize action after you start the action.

---

## Prerequisites

- Connector installed and the activation code activated. Select the required default attributes and add additional attributes on the User Attributes page.  
*See [Select Attributes to Sync with Directory](#) in [Configuring vRealize Automation](#).*
- 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.

- If you have a multi-forest Active Directory integrated with Windows Authentication and the Domain Local group contains members from different forests, do the following. Add the Bind user to the Administrators group of the Domain Local group. If the Bind user is not added, 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 box 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 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 line for a 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 your updates immediately. Click **Save & Sync** to save your changes and synchronize your updates immediately.

# 8

## Enable Your Load Balancers

If your deployment uses load balancers, re-enable secondary nodes and health checks.

The health checks for vRealize Automation vary according to version. For information, see the *vRealize Automation Load Balancing Configuration Guide* in the vRealize Automation Documentation .

# Post-Upgrade Tasks for Upgrading vRealize Automation

# 9

After you upgrade vRealize Automation 6.2.5 to 7.3 or 7.3.1, perform any required post-upgrade tasks.

This chapter includes the following topics:

- [Port Configuration for High-Availability Deployments](#)
- [Reconfigure the Built-In vRealize Orchestrator to Support High Availability](#)
- [Enabling the Connect to Remote Console Action for Consumers](#)
- [Restore External Workflow Timeout Files](#)
- [Verify That vRealize Orchestrator Service Is Available](#)
- [Reconfigure Embedded vRealize Orchestrator Infrastructure Endpoint in the Target vRealize Automation](#)
- [Restore Changes to Logging in the app.config File](#)
- [Enable Automatic Manager Service Failover After Upgrade](#)
- [Run Test Connection and Verify Upgraded Endpoints](#)

## 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 Documentation..

## Reconfigure the Built-In vRealize Orchestrator to Support High Availability

For a high-availability deployment, you must manually rejoin each target replica vRealize Automation appliance to the cluster to enable high-availability support for the embedded vRealize Orchestrator.



## Prerequisites

Log in to the target replica vRealize Automation appliance management console.

- 1 Start a browser and open the target replica vRealize Automation management console using the fully qualified domain name (FQDN) of the target replica virtual appliance: `https://vra-va-hostname.domain.name:5480`.
- 2 Log in with the user name **root** and the password that you entered when you deployed the target replica vRealize Automation appliance.

## Procedure

- 1 Select **vRA Settings > Cluster**.
- 2 In the **Leading Cluster Node** text box, enter the FQDN of the target master vRealize Automation appliance.
- 3 Enter the root password in the **Password** text box.
- 4 Click **Join Cluster**.  
Continue past any certificate warnings. The system restarts services for the cluster.
- 5 Verify that the services are running.
  - a On the top tab bar, click **Services**.
  - b Click **Refresh** to monitor the progress of services startup.

## 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](#).

## Restore External Workflow Timeout Files

You must reconfigure the vRealize Automation external workflow timeout files 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 Replace the xmldb files with the files that you backed up before migration. If you do not have backup files, reconfigure the external workflow timeout settings.

- 3 Save your settings.

## Verify That vRealize Orchestrator Service Is Available

After you upgrade to the latest version of vRealize Automation, you must verify the connection between vRealize Automation and 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 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 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.

## Reconfigure Embedded vRealize Orchestrator Infrastructure Endpoint in the Target vRealize Automation

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

### Prerequisites

- Successfully migrate to vRealize Automation 7.3.
- Log in to the target vRealize Automation console.
  - a Open the vRealize Automation console using the fully qualified domain name of the target virtual appliance: `https://vra-va-hostname.domain.name/vcac`.

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

- b Log in as a laaS administrator user.

#### Procedure

- 1 Select **Infrastructure > Endpoints > Endpoints**.
- 2 On the Endpoints page, select the vRealize Orchestrator endpoint, and click **Edit**.
- 3 In the Address text box, edit the vRealize Orchestrator endpoint URL.
  - If you migrated to a minimal environment, replace the vRealize Orchestrator endpoint URL with `https://vra-va-hostname.domain.name:443/vco`.
  - If you migrated to a high-availability environment, replace the vRealize Orchestrator endpoint URL with `https://vra-va-lb-hostname.domain.name:443/vco`.
- 4 Click **OK**.
- 5 Manually run a data collection on the vRealize Orchestrator endpoint.
  - a On the Endpoints page, select the vRealize Orchestrator endpoint.
  - b Select **Actions > Data Collection**.

Verify that the data collection is successful.

## 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 .

## Enable Automatic Manager Service Failover After Upgrade

Automatic Manager Service failover is disabled by default when you upgrade vRealize Automation.

Complete these steps to enable automatic Manager Service after upgrade.

#### Procedure

- 1 Open a command prompt as root on the vRealize Automation appliance.
- 2 Change directories to `/usr/lib/vcac/tools/vami/commands`.
- 3 To enable automatic Manager Service failover, run the following command.

```
python ./manager-service-automatic-failover ENABLE
```

To disable automatic failover throughout an laaS deployment, run the following command.

```
python ./manager-service-automatic-failover DISABLE
```

## About Automatic Manager Service Failover

You can configure the vRealize Automation IaaS Manager Service to automatically fail over to a backup if the primary Manager Service stops.

Starting in vRealize Automation 7.3, you no longer need to manually start or stop the Manager Service on each Windows server, to control which serves as primary or backup. Automatic Manager Service failover is disabled by default when you upgrade IaaS with the Upgrade Shell Script or using the IaaS Installer executable file.

When automatic failover is enabled, the Manager Service automatically starts on all Manager Service hosts, including backups. The automatic failover feature allows the hosts to transparently monitor each other and fail over when necessary, but the Windows service must be running on all hosts.

---

**Note** You are not required to use automatic failover. You may disable it and continue to manually start and stop the Windows service to control which host serves as primary or backup. If you take the manual failover approach, you must only start the service on one host at a time. With automatic failover disabled, simultaneously running the service on multiple IaaS servers makes vRealize Automation unusable.

---

Do not attempt to selectively enable or disable automatic failover. Automatic failover must always be synchronized as on or off, across every Manager Service host in an IaaS deployment.

## Run Test Connection and Verify Upgraded Endpoints

Upgrading to vRealize Automation 7.3 makes changes to endpoints in the target environment.

After you upgrade to vRealize Automation 7.3, you must use the **Test Connection** action for all applicable endpoints. You might also need to make adjustments to some upgraded endpoints. For more information, see *Considerations When Working With Upgraded or Migrated Endpoints* in *Configuring vRealize Automation*.

The default security setting for upgraded or migrated endpoints is to not accept untrusted certificates.

After upgrading or migrating from pre-vRealize Automation 7.3, if you were using untrusted certificates you must perform the following steps for all vSphere and NSX endpoints to enable certificate validation. Otherwise, the endpoint operations fail with certificate errors. For more information see VMware Knowledge Base articles *Endpoint communication is broken after upgrade to vRA 7.3 (2150230)* at <http://kb.vmware.com/kb/2150230> and *How to download and install vCenter Server root certificates to avoid Web Browser certificate warnings (2108294)* at <http://kb.vmware.com/kb/2108294>.

- 1 After upgrade or migration, log in to the vRealize Automation vSphere agent machine and restart your vSphere agents by using the **Services** tab.  
Migration might not restart all agents, so manually restart them if needed.
- 2 Wait for at least one ping report to finish. It takes a minute or two for a ping report to finish.
- 3 When the vSphere agents have started data collection, log in to vRealize Automation as an IaaS administrator.

- 4 Click **Infrastructure > Endpoints > Endpoints**.
- 5 Edit a vSphere endpoint and click **Test Connection**.
- 6 If a certificate prompt appears, click **OK** to accept the certificate.

If a certificate prompt does not appear, the certificate might currently be correctly stored in a trusted root authority of the Windows machine hosting service for the endpoint, for example as a proxy agent machine or DEM machine.

- 7 Click **OK** to apply the certificate acceptance and save the endpoint.
- 8 Repeat this procedure for each vSphere endpoint.
- 9 Repeat this procedure for each NSX endpoint.

If the **Test Connection** action is successful but some data collection or provisioning operations fail, you can install the same certificate on all the agent machines that serve the endpoint and on all DEM machines. Alternatively, you can uninstall the certificate from existing machines and repeat the above procedure for the failing endpoint.

# Troubleshooting the vRealize Automation Upgrade

# 10

The upgrade troubleshooting topics provide solutions to problems that you might encounter when upgrading vRealize Automation 6.2.5 to 7.3 or 7.3.1.

This chapter includes the following topics:

- [Installation or Upgrade Fails with a Load Balancer Timeout Error](#)
- [Upgrade Fails for IaaS Website Component](#)
- [Manager Service Fails to Run Due to SSL Validation Errors During Runtime](#)
- [Log In Fails After Upgrade](#)
- [Catalog Items Appear in the Service Catalog After Upgrade But Are Not Available to Request](#)
- [PostgreSQL External Database Merge Is Unsuccessful](#)
- [Join Cluster Command Appears to Fail After Upgrading a High-Availability Environment](#)
- [Upgrade Is Unsuccessful if Root Partition Does Not Provide Sufficient Free Space](#)
- [Backup Copies of .xml Files Cause the System to Time Out](#)
- [Delete Orphaned Nodes on vRealize Automation](#)
- [Unable to Create New Directory in vRealize Automation](#)
- [Some Virtual Machines Do Not Have a Deployment Created During Upgrade](#)
- [Certificate Not Trusted Error](#)
- [Installing or Upgrading vRealize Automation Fails](#)
- [Update Fails to Upgrade the Management Agent](#)
- [Management Agent Upgrade is Unsuccessful](#)
- [Empty Deployments Are Seen in vRealize Automation After Upgrade](#)
- [IaaS Repository Application Fails](#)
- [After Rebooting the Virtual Appliance, Automatic IaaS Upgrade Fails and Displays Pending Reboot Error](#)
- [XaaS Requests Fail After Upgrading vRealize Automation](#)
- [Upgrading IaaS in a High Availability Environment Fails](#)

## 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.
- 2 Rerun the installation or upgrade.

## Upgrade Fails for IaaS Website Component

The IaaS upgrade fails and you cannot continue the upgrade.

### Problem

The IaaS upgrade fails for the website component. The following error messages appear in the installer log file.

- System.Data.Services.Client.DataServiceQueryException:  
An error occurred while processing this request. --->  
System.Data.Services.Client.DataServiceClientException: <!DOCTYPE html>
- <b> Description: </b>An application error  
occurred on the server. The current custom error settings for this application  
prevent the details of the application error from being viewed remotely (for  
security reasons). It could, however, be viewed by browsers running on the  
local server machine.
- Warning: Non-zero return code. Command failed.
- Done Building Project "C:\Program Files  
(x86)\VMware\vCAC\Server\Model Manager Data\DeployRepository.xml"  
(InstallRepoModel target(s)) -- FAILED.

The following error messages appear in the repository log file.

- [Error]: [sub-thread-Id="20"  
context="" token=""] Failed to start repository service. Reason:  
System.InvalidOperationException: Configuration section encryptionKey is not  
protected  
at  
DynamicOps.Common.Utils.EncryptionHelpers.ReadKeyFromConfiguration(Configuration  
config)  
at DynamicOps.Common.Utils.EncryptionHelpers.Decrypt(String value)  
at DynamicOps.Repository.Runtime.CoreModel.GlobalPropertyItem.Decrypt(Func`2  
decryptFunc)  
at  
DynamicOps.Common.Entity.ContextHelpers.OnObjectMaterializedCallbackEncryptable(Object  
sender, ObjectMaterializedEventArgs e)  
at  
System.Data.Common.Internal.Materialization.Shaper.RaiseMaterializedEvents()  
at  
System.Data.Common.Internal.Materialization.Shaper`1.SimpleEnumerator.MoveNext()  
at System.Linq.Enumerable.FirstOrDefault[TSource](IEnumerable`1 source)  
at System.Linq.Queryable.FirstOrDefault[TSource](IQueryable`1 source)  
at  
DynamicOps.Repository.Runtime.Common.GlobalPropertyHelper.GetGlobalPropertyValue(Core  
ModelEntities  
coreModelContext, String propertyName, Boolean throwIfPropertyNotFound)  
at  
DynamicOps.Repository.Runtime.CafeClientAbstractFactory.LoadSolutionUserCertificate()  
at  
DynamicOps.Repository.Runtime.CafeClientAbstractFactory.InitializeFromDb(String  
coreModelConnectionString)  
at DynamicOps.Repository.Runtime.Common.RepositoryRuntime.Initialize().



### Cause

laas upgrade fails when the creation date for the web.config file is the same as or later than the modified date.

### Solution

- 1 Log in to the laaS website component server as administrator.
- 2 Change directories to the vRealize Automation installation folder.
- 3 Start your preferred text editor with the **Run as Administrator** option.
- 4 Locate and select the web.config file and save the file to change its file modification date.
- 5 Examine the web.config file properties to confirm that the file modification date is later than the creation date.
- 6 Upgrade laaS.

## 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 After Upgrade 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 the latest version of vRealize Automation.

### 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

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.x 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**.

## 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 newer 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 newer than the embedded PostgreSQL version, contact support for assistance to merge your external PostgreSQL database.

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

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

```
(echo d; echo 2; echo d; echo 1; echo n; echo p; echo ; echo ; echo '+44G';
echo n; echo p; echo ; echo ; echo ; echo w; echo p; echo q) | fdisk /dev/sda
```
- 5 Run the following command to change the swap partition type.

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

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

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

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

```
partprobe
```

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

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

```
mkswap /dev/sda2
```

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

```
swapon -a
```

- 10 Reboot the vRealize Automation appliance.

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

```
resize2fs /dev/sda1
```

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

## 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\xml\` 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.

## Delete Orphaned Nodes on vRealize Automation

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 each IaaS and virtual appliance node is 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**.

## Unable to Create New Directory in vRealize Automation

Trying to add new directory with the first sync connector fails.

### Problem

This issue occurs due to a bad `config-state.json` file located in `usr/local/horizon/conf/states/VSPHERE.LOCAL/3001/`.

For information about fixing this issue, see [Knowledge Base Article 2145438](#).

## Some Virtual Machines Do Not Have a Deployment Created During Upgrade

Virtual machines in the missing state at the time of upgrade do not have a corresponding deployment created in the target environment.

### Problem

If a virtual machine is in the missing state in the source environment during upgrade, a corresponding deployment is not created in the target environment. If a virtual machine goes out of the missing state after upgrade, you can import the machine to the target deployment using bulk import.

## Certificate Not Trusted Error

When you view the infrastructure Log Viewer page in the vRealize Automation appliance console, you might see an endpoint connection failure report with these words, `Certificate is not trusted`.

### Problem

On the vRealize Automation appliance console, select **Infrastructure > Monitoring > Log**. On the Log Viewer page, you might see a report similar to this:

Failed to connect to the endpoint. To validate that a secure connection can be established to this endpoint, go to the vSphere endpoint on the Endpoints page and click the Test Connection button.

Inner Exception: Certificate is not trusted (RemoteCertificateChainErrors). Subject: C=US, CN=vc6.mycompany.com Thumbprint: DC5A8816231698F4C9013C42692B0AF93D7E35F1

### Cause

Upgrading to vRealize Automation 7.3 makes changes to the endpoints from your original environment. For environments recently upgraded to vRealize Automation 7.3, the IaaS administrator must review each existing endpoint that uses a secure, https, connection. If an endpoint has a `Certificate is not trusted` error, the endpoint does not work properly.

### Solution

- 1 Log in to the vRealize Automation console as an infrastructure administrator.
- 2 Select **Infrastructure > Endpoints > Endpoints**.
- 3 Complete these steps for each endpoint with a secure connection.
  - a Click **Edit**.
  - b Click **Test Connection**.
  - c Review the certificate details and click **OK** if you trust this certificate.
  - d Restart the Windows services for all IaaS Proxy Agents used by this endpoint.
- 4 Verify that Certificate is not trusted errors no longer appear on the infrastructure Log Viewer page.

## Installing or Upgrading vRealize Automation Fails

Installing or upgrading vRealize Automation fails and an error message appears in the log file.

### Problem

When you install or upgrade vRealize Automation, the procedure fails. This usually happens when a fix applied during install or upgrade is not successful. An error message appears in the log file similar to the following: Security error. Applying automatic fix for FIREWALL prerequisite failed. RPM Status 1: Pre install script failed, package test and installation skipped.

### Cause

The Windows environment has a group policy for PowerShell script execution set to Enabled.

### Solution

- 1 On the Windows host machine, run `gpedit.msc` to open the Local Group Policy Editor.
- 2 In the left pane under **Computer Configuration**, click the expand button to open **Administrative Templates > Windows Components > Windows PowerShell**.
- 3 For **Turn on Script Execution**, change the state from Enabled to Not Configured.

## Update Fails to Upgrade the Management Agent

An error message about the Management Agent appears when you click **Install Updates** on the vRealize Automation appliance 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 identifies only 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 fails.

Perform these tasks on the affected nodes according to your situation:

### Solution

- If the Management Agent service is not running, start the service and restart upgrade on the virtual appliance.
- If the Management Agent service is running and the Management Agent is upgraded, restart upgrade on the virtual appliance.
- If the Management Agent service is running, but the Management Agent is not upgraded, perform a manual upgrade.
  - a Open a browser and navigate to the vRealize Automation IaaS installation page on the vRealize Automation appliance at `https:// va-hostname.domain.name:5480/install`.
  - b Download and run the Management Agent Installer.
  - c Reboot the Management Agent machine.
  - d Restart upgrade on the virtual appliance.

## Management Agent Upgrade is Unsuccessful

The Management Agent upgrade is unsuccessful while upgrading from vRealize Automation to the latest version.

### 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.

## Empty Deployments Are Seen in vRealize Automation After Upgrade

Post provisioning actions appear to complete successfully but no change actually takes place.

### Problem

Upgrade process causes some virtual machines to become assigned to the wrong deployment. For information, see Knowledge Base article [2151400](#).

## IaaS Repository Application Fails

The presence of Microsoft Monitoring Agent service can cause the IaaS repository application to fail.

### Problem

IaaS repository fails and a "System.Web.Http.dll" version 4.0.0.0 error appears in the `Repository.log`. For information, see [Knowledge Base article 52444](#).

## After Rebooting the Virtual Appliance, Automatic IaaS Upgrade Fails and Displays Pending Reboot Error

After you reboot the virtual appliance, the automatic IaaS upgrade command `upgrade-server` fails and a `Pending reboot` error appears.

### Problem

An anti-virus program running on the virtual appliance causes this problem. For information, see [Knowledge Base article 52211](#).

## XaaS Requests Fail After Upgrading vRealize Automation

If your environment is configured for high availability and you upgrade from vRealize Automation from 6.2.5 to 7.3, XaaS requested blueprints can fail with a system exception error.

### Problem

Configuration differences in the embedded vRealize Orchestrator between vRealize Automation 6.x and 7.x cause this problem. For information, see [Knowledge Base article 2150604](#).

## Upgrading IaaS in a High Availability Environment Fails

Running the IaaS upgrade process on the primary web server node with load balancing enabled fails. You might see these error messages: "System.Net.WebException: The operation has timed out" or "401 - Unauthorized: Access is denied due to invalid credentials."

### Problem

Upgrading IaaS with load balancing enabled can cause an intermittent failure. When this happens, you must run the vRealize Automation upgrade again with load balancing disabled.

### Solution

- 1 Revert your environment to the pre-update snapshots.
- 2 Open a remote desktop connection to the primary IaaS web server node.
- 3 Navigate to the Windows hosts file at `c:\windows\system32\drivers\etc`.
- 4 Open the hosts file and add this line to bypass the web server load balancer.

*IP\_address\_of\_primary\_iaas\_website\_node vrealizeautomation\_iaas\_website\_lb\_fqdn*

Example:

10.10.10.5 vra-iaas-web-lb.domain.com

- 5 Save the hosts file and retry the vRealize Automation update.
- 6 When the vRealize Automation update completes, open the hosts file and remove the line you added in step 4.