

Installing and Configuring vRealize Automation for the Rainpole Scenario

vRealize Automation 7.3

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

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Installing and Configuring vRealize Automation for the Rainpole Scenario

Installing and Configuring vRealize Automation for the Rainpole Scenario provides instructions for installing and configuring vRealize Automation for a fictional company named Rainpole.

In the Rainpole scenario, a vSphere administrator installs a minimal deployment of vRealize Automation into a vSphere environment. After installation, the administrator logs into the vRealize Automation console and requests a catalog item that configures the Rainpole environment to provision and manage vSphere machines for a proof of concept deployment.

After the vSphere administrator is familiar with the proof of concept Rainpole environment, the administrator configures vRealize Automation as a development environment. The administrator prepares Rainpole so that a group of architects can build and test blueprints for import into a production environment.

Intended Audience

This information is intended for vSphere administrators who want to install a minimal deployment of vRealize Automation to use as a proof of concept or development environment.

VMware Technical Publications Glossary

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

Install and Configure a vRealize Automation Proof of Concept Deployment for Rainpole

1

Rainpole is a scenario where you, a vSphere administrator, want to install a minimal vRealize Automation deployment into your existing vSphere environment. You use the installation wizard to install vRealize Automation and create initial content catalog items that help you quickly configure an environment to use as a proof of concept.

A proof of concept deployment is not suitable for production. When you complete the proof of concept deployment, you configure it as a development environment where you and your IT team create and test blueprints. You can export blueprints and other design elements out of your development environment and into your production environment.

1 [Scenario: Prepare to Install vRealize Automation for Rainpole](#) on page 7

As the vSphere administrator, you prepare your vSphere environment to install a minimal deployment of vRealize Automation.

2 [Scenario: Install vRealize Automation for Rainpole](#) on page 16

As the vSphere administrator, you want to install vRealize Automation as a proof of concept and development environment. You install a minimal deployment of vRealize Automation and use the installation wizard to create initial content for a proof of concept environment.

3 [Scenario: Prepare vSphere Resources for Machine Provisioning in Rainpole](#) on page 23

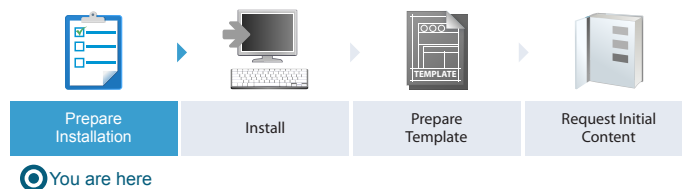
As the vSphere administrator creating templates for vRealize Automation, you want to use the vSphere Web Client to prepare for cloning CentOS machines in vRealize Automation.

4 [Scenario: Request Initial Content for a Rainpole Proof of Concept Deployment](#) on page 26

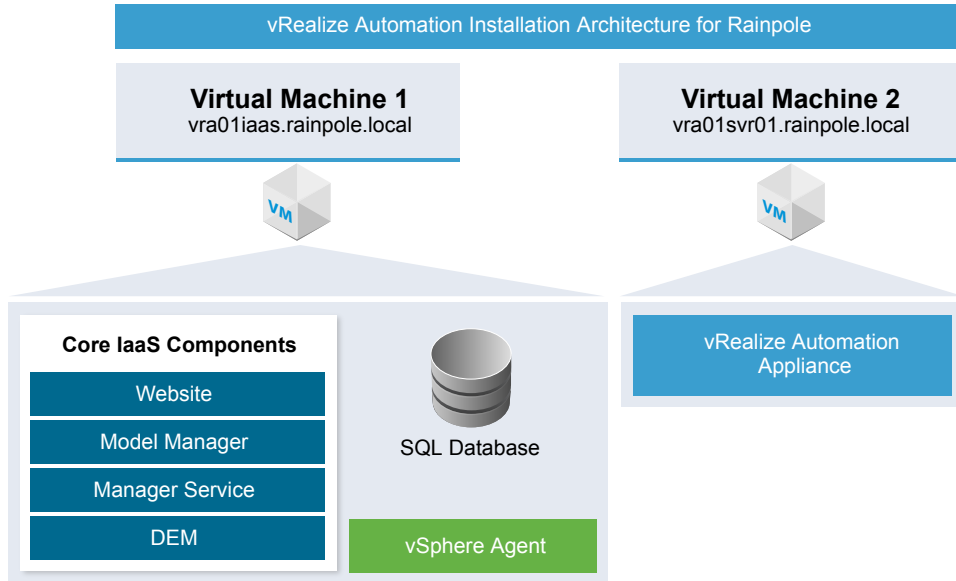
Using your configuration administrator privileges, you request a catalog item to quickly populate your Rainpole environment and evaluate a proof of concept vRealize Automation deployment.

Scenario: Prepare to Install vRealize Automation for Rainpole

As the vSphere administrator, you prepare your vSphere environment to install a minimal deployment of vRealize Automation.



Before you begin the installation, you create worksheets to record important environment variables and settings for later reference. You ready your environment for the Rainpole installation by creating vSphere credentials and DNS entries. Then you prepare two virtual machines, a windows server to host the vRealize Automation IaaS components, and a vRealize Automation appliance that you deploy from an OVF file.



Prerequisites

Verify that you have administrative access to a working vSphere environment, including access to a vSphere client and vSphere Web client.

Procedure

- 1 [Scenario: Worksheet for Installing vRealize Automation for Rainpole](#) on page 9
As the vSphere administrator, you want to collect information about your environment and record the values in a worksheet to help you quickly access required information, expedite the installation and configuration process, and provide a record of important settings that you can refer to later.
- 2 [Scenario: Create vSphere Credentials for Rainpole](#) on page 11
As the vSphere administrator, you create or identify vSphere credentials that meet the minimum requirements for vRealize Automation to manage your environment.
- 3 [Scenario: Configure DNS Entries for Your vRealize Automation Rainpole Machines](#) on page 13
vRealize Automation requires the system administrator to identify all hosts using a fully qualified domain name (FQDN). As the vSphere administrator, you configure Domain Name System (DNS) to resolve all vRealize Automation host names in your environment.
- 4 [Scenario: Prepare the Windows IaaS Server for Installing vRealize Automation for Rainpole](#) on page 13
As the vSphere administrator, you create or identify a Windows machine to host the vRealize Automation IaaS components and verify that the machine meets the installation requirements.
- 5 [Scenario: Enable Time Synchronization on the Windows IaaS Server for Rainpole](#) on page 15
As the vSphere administrator, you want to use VMware Tools to synchronize clocks on the Windows servers with the ESX/ESXi host. Time synchronization ensures that you can successfully install vRealize Automation.

6 [Scenario: Deploy a vRealize Automation Appliance for Rainpole](#) on page 15


As the vSphere administrator, you want to deploy and configure the vRealize Automation appliance to prepare to install vRealize Automation.

Scenario: Worksheet for Installing vRealize Automation for Rainpole

As the vSphere administrator, you want to collect information about your environment and record the values in a worksheet to help you quickly access required information, expedite the installation and configuration process, and provide a record of important settings that you can refer to later.

Procedure

- 1 Create a worksheet and record general information about your environment that you can refer to throughout the installation and configuration process.

Variable	Your Environment Value	Example Value	Notes
IP address of your active directory domain		198.15.100.50	
Base DN		cn=users,dc=rainpole,dc=local	Distinguished Name (DN) of the starting point for directory server searches.
Bind DN		cn=config_admininfra,cn=users,dc=rainpole,dc=local	Full distinguished name (DN), including common name (CN), of an Active Directory user account that has privileges to search for users.
Bind DN Password		VMware!!	Active Directory password for the account that can search for users.
Endpoint Host		vsphereA.rainpole.local	FQDN of the machine on which you installed your vCenter Server. Used to create a vRealize Automation endpoint for managing your vSphere environment.
DNS Address		198.15.100.61	
Default Gateway Address		198.15.100.60	
Static IP Addresses			
Company logo for branding			
Background hex color of your company		20c576	
Text hex color of your company		FFFFFF	

- 2 Create a worksheet to record information about your environment while you complete the steps to prepare for installation.

Variable	Your Environment Value	Example Value	Notes
vSphere user name		administrator@vsphere.local	Must meet minimum requirements for vRealize Automation to manage your vSphere environment.
vSphere password		VMware1!	
vRealize Automation appliance name (FQDN)		vra01svr01.rainpole.local	
User name	root	root	
Password		VMware1!	You configure the password when you deploy the vRealize Automation appliance.
IaaS Server Host Name		vra01iaas.rainpole.local	
User name		administrator@rainpole.com	Administrative credentials for the Windows IaaS Server
Password		VMware1!	
Default Gateway Address		198.15.100.60	
DNS Address		198.15.100.61	

- 3 Create a worksheet to record information about your environment as you install vRealize Automation.

Variable	Your Environment Value	Example Value	Notes
SSL certificate fingerprint of vRealize Automation Appliance		35df1ce06a19b693e7a109b607cfe05c683a0c1b	
System administrator for the default tenant	administrator	administrator	administrator@vsphere.local Allows access to the default tenant vsphere.local.
Password		VMware1!	
Database Security Passphrase		VMware1!	
Database Name		vra	
Endpoint name for vSphere Agent		Rainpole vCenter	You must use the same endpoint name when you configure the vSphere endpoint in the vRealize Automation console.
Configuration administrator username for initial content creation	configurationadmin	configurationadmin	configurationadmin@vsphere.local Allows access to the default tenant vSphere.local, and the ability to request catalog items which quickly prepare a proof of concept environment.
Password		VMware1!	

- 4 Create a worksheet to record information about your vSphere template and customization objects while you prepare vSphere resources for provisioning.

Variable	Your Environment Value	Example Value
Template		Rainpole_centos_63_x86
Customization Object		Linux
vSphere cluster on which template is located		Cluster A

- 5 Create a worksheet to record information about your environment while you configure the default tenant.

Variable	Your Environment Value	Example Value
Local User with Tenant Administrator privileges		Rainpole tenant admin
Password		VMware1!
Local User for testing blueprints		test_user
Password		VMware1!
Custom group name		Rainpole architects

What to do next

As part of the preparation process, you create or identify vSphere credentials that meet the minimum requirements for vRealize Automation to manage your environment.

Scenario: Create vSphere Credentials for Rainpole

As the vSphere administrator, you create or identify vSphere credentials that meet the minimum requirements for vRealize Automation to manage your environment.

Procedure

- 1 Create or identify vSphere credentials that meet the minimum requirements for vRealize Automation to manage your environment.

Table 1-1. Permissions Required for vSphere Agent to Manage vCenter Server Instance

Attribute Value	Permission
Datastore	Allocate Space
	Browse Datastore
Datastore Cluster	Configure a Datastore Cluster
Folder	Create Folder
	Delete Folder
Global	Manage Custom Attributes
	Set Custom Attribute
Network	Assign Network
Permissions	Modify Permission
Resource	Assign VM to Res Pool
	Migrate Powered Off Virtual Machine

Table 1-1. Permissions Required for vSphere Agent to Manage vCenter Server Instance (Continued)

Attribute Value		Permission
Virtual Machine	Inventory	Migrate Powered On Virtual Machine
		Create from existing
		Create New
		Move
	Interaction	Remove
		Configure CD Media
		Console Interaction
		Device Connection
		Power Off
		Power On
		Reset
		Suspend
		Tools Install
	Configuration	Add Existing Disk
		Add New Disk
		Add or Remove
		Remove Disk
		Advanced
		Change CPU Count
		Change Resource
		Extend Virtual Disk
		Disk Change Tracking
		Memory
		Modify Device Settings
		Rename
		Set Annotation (version 5.0 and later)
		Settings
		Swapfile Placement
	Provisioning	Customize
		Clone Template
		Clone Virtual Machine
		Deploy Template
		Read Customization Specs
	State	Create Snapshot
		Remove Snapshot
		Revert to Snapshot

- 2 Record the credentials so that you can provide them during the installation of the vRealize Automation agent for vSphere.

- 3 Disable or reconfigure any third-party software that might change the power state of virtual machines outside of vRealize Automation.

Such changes can interfere with the management of the machine life cycle by vRealize Automation.

What to do next

You configure your Domain Name System (DNS) to resolve all vRealize Automation host names in your environment.

Scenario: Configure DNS Entries for Your vRealize Automation Rainpole Machines

vRealize Automation requires the system administrator to identify all hosts using a fully qualified domain name (FQDN). As the vSphere administrator, you configure Domain Name System (DNS) to resolve all vRealize Automation host names in your environment.

IMPORTANT vRealize Automation does not allow navigation to hosts that contain the underscore (_) character in the host name.

Procedure

- ◆ For each vRealize Automation installation machine, create vCenter Server DNS entries with forward records and reverse lookups using Pointer (PTR) records.

Host Name	Description	Sample Static IP Address	IP Address for Your Environment
vra01svr01.rainpole.local	Host name of the vRealize Automation appliance you deploy in a later preparation step.	198.15.100.50	
vra01iaas.rainpole.local	Host name of the Windows IaaS server you create or identify in a later preparation step.	198.15.100.51	

What to do next

You want to create or identify a Windows machine to host your vRealize Automation IaaS components and verify that your machine meets the minimum requirements.

Scenario: Prepare the Windows IaaS Server for Installing vRealize Automation for Rainpole

As the vSphere administrator, you create or identify a Windows machine to host the vRealize Automation IaaS components and verify that the machine meets the installation requirements.

Procedure

- 1 Create or identify a virtual machine to host your vRealize Automation IaaS components.

Option	Values
Host Name	vra01iaas01.rainpole.local
CPUs	2 CPUs
Memory	8 GB memory
Disk Storage	30 GB disk storage
Operating System	Windows 2008 R2 SP1, or Windows 2012 R2

- 2 Install VMware Tools on your Windows IaaS server, vra01iaas01.rainpole.local.

- 3 Verify that your Windows IaaS server, vra01iaas01.rainpole.local, meets the requirements to host vRealize Automation IaaS components.

Option	Values
Microsoft .NET	Microsoft .NET Framework 4.5.2 or later.
Microsoft PowerShell	Microsoft PowerShell 2.0 (included with Windows Server 2008 R2 SP1 and later) or Microsoft PowerShell 3.0 on Windows Server 2012 R2.
Microsoft Internet Information Services	Microsoft Internet Information Services 7.5.
Microsoft Services	SecondaryLogOnService is running.
Java	<ul style="list-style-type: none"> ■ Install 64-bit Java 1.8 or later. Do not use 32-bit. ■ Set the JAVA_HOME environment variable to the Java installation folder. ■ Verify that %JAVA_HOME%\bin\java.exe is available.

- 4 Verify that your Windows IaaS server, vra01iaas01.rainpole.local, has the required Microsoft Internet Information Services configuration.

Table 1-2. Required Configuration for Microsoft Internet Information Services

IIS Component	Setting
Internet Information Services (IIS) modules installed	<ul style="list-style-type: none"> ■ WindowsAuthentication ■ StaticContent ■ DefaultDocument ■ ASPNET 4.5 ■ ISAPIExtensions ■ ISAPIFilter
IIS Authentication settings	<ul style="list-style-type: none"> ■ Windows Authentication enabled ■ AnonymousAuthentication disabled ■ Negotiate Provider enabled ■ NTLM Provider enabled ■ Windows Authentication Kernel Mode enabled ■ Windows Authentication Extended Protection disabled ■ For certificates using SHA512, TLS1.2 must be disabled on Windows 2012 or Windows 2012 R2 servers
IIS Windows Process Activation Service roles	<ul style="list-style-type: none"> ■ ConfigurationApi ■ NetEnvironment ■ ProcessModel ■ WcfActivation (Windows 2008 only) ■ HttpActivation ■ NonHttpActivation

What to do next

You enable time synchronization on your Windows IaaS server to ensure a successful vRealize Automation installation.

Scenario: Enable Time Synchronization on the Windows IaaS Server for Rainpole

As the vSphere administrator, you want to use VMware Tools to synchronize clocks on the Windows servers with the ESX/ESXi host. Time synchronization ensures that you can successfully install vRealize Automation.

Procedure

- 1 Open a command prompt on the vra01iaas.rainpole.local machine.
- 2 Navigate to the VMware Tools directory.

```
cd C:\Program Files\VMware\VMware Tools
```

- 3 Display the timesync status.

```
VMwareToolboxCmd.exe timesync status
```

- 4 Enter the command to enable timesync.

```
VMwareToolboxCmd.exe timesync enable
```

Your Windows IaaS server vra01iaas.rainpole.local is ready to host your vRealize Automation IaaS components.

What to do next

Deploy your vRealize Automation appliance.

Scenario: Deploy a vRealize Automation Appliance for Rainpole

As the vSphere administrator, you want to deploy and configure the vRealize Automation appliance to prepare to install vRealize Automation.

Procedure

- 1 Download the vRealize Automation appliance open virtualization format (OVF) template from the VMware Web site.
- 2 Log in to the vSphere Client as a user with **system administrator** privileges.
- 3 Select **File > Deploy OVF Template** from the vSphere client.
- 4 Browse to the vRealize Automation appliance OVF file you downloaded.
- 5 Click **Open** and click **Next**.
- 6 Click **Next** on the OVF Template Details page.
- 7 Accept the license agreement and click **Next**.
- 8 Enter the virtual appliance name, **vra01svr01**, in the **Name** text box, select the domain to deploy the virtual appliance, and click **Next**.
- 9 Follow the prompts until the Disk Format page appears.
- 10 Verify that 5.3 GB is available to deploy the virtual appliance and click **Next**.
- 11 Follow the prompts to the Properties page and configure the values.
 - a Enter the root password, **VMware1!**, to use when you log in to the virtual appliance console.
 - b Enter **vra01svr01.rainpole.local** in the **Hostname** text box.

- c Select the **SSH service** check box to enable SSH service for the appliance and click **Next**.
- d Set the Default Gateway address and DNS address.

The sample Default Gateway address is 198.15.100.60 and sample DNS address is 198.15.100.61.

- 12 Select **Power on after deployment** and click **Finish**.
- 13 Click **Close** after the file finishes deploying into the vCenter Server.
- 14 Wait for the host machine to restart.

This process could take up to five minutes.

A success message appears.

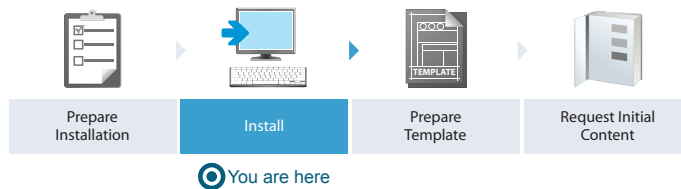
- 15 Open a command prompt and ping **vra01svr01.rainpole.local** to verify that the vRealize Automation appliance is running.

What to do next

Enable time synchronization on your vRealize Automation appliance to ensure a successful installation.

Scenario: Install vRealize Automation for Rainpole

As the vSphere administrator, you want to install vRealize Automation as a proof of concept and development environment. You install a minimal deployment of vRealize Automation and use the installation wizard to create initial content for a proof of concept environment.



Procedure

- 1 [Scenario: Start the Installation Wizard for Rainpole](#) on page 17
As the vSphere administrator, you navigate to the management console of your vRealize Automation appliance and start the installation wizard for a minimal deployment.
- 2 [Scenario: Install the Management Agent on Your Windows IaaS Server for Rainpole](#) on page 18
As the vSphere administrator, you install the Management Agent on your Windows IaaS server by using the information provided on the Installation Prerequisites page of the vRealize Automation installation wizard. You download the Management Agent installer from the vRealize Automation appliance, install the Management Agent on the Windows host, and load the vRealize Automation appliance site certificate information.
- 3 [Scenario: Run the Prerequisite Checker for Rainpole](#) on page 20
As the vSphere administrator, you run the Prerequisite Checker to verify that the IaaS machine vra01iaas.rainpole.local is configured correctly for a vRealize Automation installation.
- 4 [Scenario: Specify Deployment Configuration Parameters for Rainpole](#) on page 20
As the vSphere administrator, you specify all your deployment configuration parameters before you begin the installation process. You can update or edit any of your configuration choices before you start the installation.

- 5 [Scenario: Take Snapshots Before you Start the Installation for Rainpole](#) on page 22
As the vSphere administrator, you take snapshots of all your virtual machines before starting the installation. If your installation fails, you can use the snapshots to revert to the last known good configuration and try to install again.
- 6 [Scenario: Complete the vRealize Automation Installation for Rainpole](#) on page 22
As the vSphere administrator, you start the installation of vRealize Automation and wait for the installation to complete successfully.

Scenario: Start the Installation Wizard for Rainpole

As the vSphere administrator, you navigate to the management console of your vRealize Automation appliance and start the installation wizard for a minimal deployment.

NOTE You cannot use the installation wizard after you perform any manual installation steps. Do not cancel the installation wizard during configuration. If you close the wizard, you must log out of the appliance and log in to restart the installation wizard. The wizard page opens at the last page you configured.

Procedure

- 1 Enter **https://vra01svr01.rainpole.local:5480** to open the vRealize Automation management console.
- 2 Accept unsigned certificates.
- 3 Enter the username **root** and password **VMware1!**.
The installation wizard opens.
- 4 Click **Next**.
- 5 Accept the license agreement and click **Next**.
- 6 Accept the default installation type Minimal deployment.
- 7 Verify that the **Install Infrastructure as a Service** option is selected and click **Next**.
- 8 Click **Next**.

What to do next

Install the Management Agent on your Windows IaaS server by using the information provided on the Installation Prerequisites page of the vRealize Automation installation wizard.

Scenario: Install the Management Agent on Your Windows IaaS Server for Rainpole

As the vSphere administrator, you install the Management Agent on your Windows IaaS server by using the information provided on the Installation Prerequisites page of the vRealize Automation installation wizard. You download the Management Agent installer from the vRealize Automation appliance, install the Management Agent on the Windows host, and load the vRealize Automation appliance site certificate information.

Procedure

- 1 Without exiting the installation wizard, locate the SSL certificate fingerprint of your vRealize Automation appliance.
 - a Log in to your vRealize Automation appliance, `vra01svr01.rainpole.local`, by using SSH.
 - b View the SSL certificate fingerprint.


```
openssl x509 -in /opt/vmware/etc/lighttpd/server.pem -fingerprint -noout -sha1
```

The certificate information appears, for example:

```
SHA1 Fingerprint=CC:6C:AA:BF:3A:93:84:55:71:D7:21:FC:F1:FE:B1:4D:EF:AC:07:AB
```
 - c Copy the fingerprint or keep the command prompt open for reference.
- 2 On the Installation Prerequisites page of the Installation Wizard, click the management agent installer link, **vCAC-IaaSManagementAgent-Setup.msi**, to download the agent from `https://vra01svr01.rainpole.local:5480/installer/download/vCAC-IaaSManagementAgent-Setup.msi`.
- 3 Accept unsigned certificates.
- 4 Run the Management Agent installer.
- 5 Click **Next** on the Welcome page to start the wizard.
- 6 Accept the license agreement and click **Next**.
- 7 Accept the default location, `C:\Program Files\VMware\VCAC\Management Agent\`.
- 8 Click **Next**.

- 9 Enter the Management Site Service details.

Management Site Service

Specify the VA host for the Management Site Service to use for the agent.

vRA appliance address:

 Specify the scheme and the port (hosted by default on 5480). Example: https://va-address:5...

Root username: Password:

Provide vRealize Automation appliance root user credentials

Management Site Service certificate SHA1 fingerprint:

☒ I confirm the fingerprint matches the Management Site Service SSL certificate

Option	Input
vRA appliance address	https://vra01svr01.rainpole.local:5480
Root username	root
Password	VMware1!
Management site server certificate	Click Load to populate the SHA1 fingerprint information with the SSL certificate fingerprint from your vRealize Automation appliance. Confirm that the loaded fingerprint matches the SSL certificate fingerprint from your vRealize Automation appliance machine. If the fingerprint does not match, confirm that you have entered the vRealize Automation appliance address correctly.

- 10 Click **Next**.
- 11 Provide administrative credentials for your Windows IaaS server, vra01iaas.rainpole.local.
- 12 Click **Next**.
- 13 Click **Install**.
- 14 When the installation finishes, click **Finish**.

Windows hosts with successfully installed Management Agents appear on the Installation Prerequisites page of the installation wizard.

What to do next

Run the Prerequisite Checker to confirm that your Windows IaaS server meets all the requirements to run vRealize Automation.

Scenario: Run the Prerequisite Checker for Rainpole

As the vSphere administrator, you run the Prerequisite Checker to verify that the IaaS machine `vra01iaas.rainpole.local` is configured correctly for a vRealize Automation installation.

Procedure

- 1 Confirm that your Windows IaaS server, `vra01iaas.rainpole.local`, appears in the IaaS Host Name column on the Installation Prerequisites page of the installation wizard.
- 2 Click **Next**.
- 3 Click **Run** to start the Prerequisite Checker.
- 4 If you see a warning, you can get more information about the error or choose to automatically correct the error.
 - Click **Show Details** for information about the error and instructions for solving the problem.
 - Click **Fix** to automatically fix the error. This also restarts the Windows machine as needed.
- 5 Click **Run** to verify your corrections.
- 6 Click **Next** when all errors are resolved.

The IaaS machine, `vra01iaas.rainpole.local`, meets installation requirements.

What to do next

Specify deployment configuration parameters for your vRealize Automation appliance and IaaS components.

Scenario: Specify Deployment Configuration Parameters for Rainpole

As the vSphere administrator, you specify all your deployment configuration parameters before you begin the installation process. You can update or edit any of your configuration choices before you start the installation.

Procedure

- 1 Enter **`vra01svr01.rainpole.local`** in the **vRealize Address** text box on the vRealize Automation Host page of the installation wizard.
- 2 Click **Next**.
- 3 Enter the password **`VMware1!`** to create a system administrator login `administrator@vsphere.local` who can access the default tenant.

Do not end your password with an equal sign (=). The password is accepted, but results in errors when you perform operations such as saving endpoints.
- 4 Click **Next**.
- 5 Enter the IaaS Host information.

Option	Input
IaaS Web Address	<code>vra01iaas.rainpole.local</code>
Install IaaS Components	Select <code>vra01iaas01.rainpole.local</code> from the drop-down menu.
Username and Password	Provide administrative credentials for your Windows IaaS server.
Database Security Passphrase	<code>VMware1!</code>

- 6 Click **Next**.

- 7 Enter the SQL Server information.
 - a Enter **vra01iaas.rainpole.local** in the **Server name** text box.
 - b Enter **vra** in the **Database name** text box.
 - c Select **Create new database**.
 - d Accept the remaining default configurations.
 - e Click **Validate** to confirm your settings.
- 8 Verify the configuration information for the Distributed Execution Manager (DEM) in your deployment.

Option	Input
IaaS Host Name	vra01iaas01.rainpole.local
Instance Name	DEM
Username and Password	Verify the provided administrative credentials for your Windows IaaS server.

- 9 Click **Validate** to verify your settings and then click **Next**.
- 10 Enter the vSphere agent information so vRealize Automation can manage your vSphere resources.

Option	Input
IaaS Host Name	vra01iaas01.rainpole.local
Agent Type	vSphere
Agent Name	vCenter
Endpoint Name	Rainpole vCenter . The name you enter here is the same name you must enter later when you create your vSphere endpoint during IaaS configuration.
Username	administrator@vsphere.local
Password	VMware1!

- 11 Click **Validate** to verify your settings and then click **Next**.
- 12 Generate certificates for your vRealize Automation appliance and Windows IaaS server.
 - a Select **Generate Certificate** from the Certificate Action menu for the vRealize Automation appliance.
 - b Enter organizational information.

Option	Input
Organization	Rainpole
Organizational Unit	Dev Environment
Country Code	Input your country code, for example US .

- c Click **Save Generated Certificate** and click **Next**.
 - d Repeat this step to generate a Web certificate for your Windows IaaS server and click **Next**.
 - e Because you installed the Manager Service and Web components on the same IaaS server, click **Next** on the Manager Service Certificate page.
- 13 Click **Validate** to confirm the information you entered is correct.

NOTE The validation process can take between 10 minutes to half an hour. Do not close the installation wizard or click **Next** while this process is running.

- 14 Correct any errors that might appear and repeat the validation process.

You validated your deployment configurations and you are ready to install vRealize Automation.

What to do next

Take snapshots of your machines before you start the installation so you can recover your environment if anything goes wrong.

Scenario: Take Snapshots Before you Start the Installation for Rainpole

As the vSphere administrator, you take snapshots of all your virtual machines before starting the installation. If your installation fails, you can use the snapshots to revert to the last known good configuration and try to install again.

NOTE Do not exit the installation wizard or cancel the installation.

Procedure

- 1 Without existing the installation wizard, log in to the vSphere Client.
- 2 Locate the vra01svr01.rainpole.local server in the vSphere Client inventory.
- 3 Right-click the server the inventory and select **Take Snapshot**.
- 4 Enter **vra-install-snapshot** as the snapshot name.
- 5 Select **Snapshot the virtual machine's memory** checkbox to capture the memory of the server and click **OK**.

If something goes wrong with your installation, you can revert back to this snapshot.

- 6 Repeat this procedure to create a snapshot of your Windows IaaS server, vra01iaas01.rainpole.local.

What to do next

Start your installation.

Scenario: Complete the vRealize Automation Installation for Rainpole

As the vSphere administrator, you start the installation of vRealize Automation and wait for the installation to complete successfully.

Procedure

- 1 Return to the Create Snapshots page of the installation wizard and click **Next**.

The installation starts. Depending on your network configuration, the installation can take between 15 minutes and one hour.

- 2 Address any installation failures.

Option	Description
If the failure is in the virtual appliance components	<ul style="list-style-type: none"> ■ Revert all servers to snapshots, including the one from which you are running the wizard. ■ Make the required changes. ■ Refresh the wizard page. ■ Log on and run the wizard again. <p>The wizard opens at the preinstallation step.</p>
If the Retry Failed button is enabled	<ul style="list-style-type: none"> ■ Make the required changes. ■ Return to the Installation wizard and click Retry Failed. <p>The installer attempts to install all failed components.</p>
If the Retry All IaaS button is enabled	<ul style="list-style-type: none"> ■ Revert your Windows IaaS server to the snapshot you created earlier. ■ Make the required changes. ■ Return to the installation wizard and click Retry All IaaS.

A confirmation message appears when the installation finishes.

- 3 Review the installation summary and click **Next**.
- 4 Enter your product license key and click **Next**.
- 5 Verify your product license key and click **Next**.
- 6 Join the VMware Customer Experience Improvement Program and click **Next**.

VMware receives information that enables product improvements.

- 7 Enter **VMware1!** in the password text boxes to create credentials for a configuration administrator.
- 8 Click **Create Initial Content** to create vRealize Automation catalog items that your configuration administrator can request.

Creating initial content allows you to get a proof of concept environment up and running very shortly.

- 9 Click **Next**.
- 10 Click **Finish**.

You installed vRealize Automation for Rainpole, and created initial content catalog items for your configuration administrator to request.

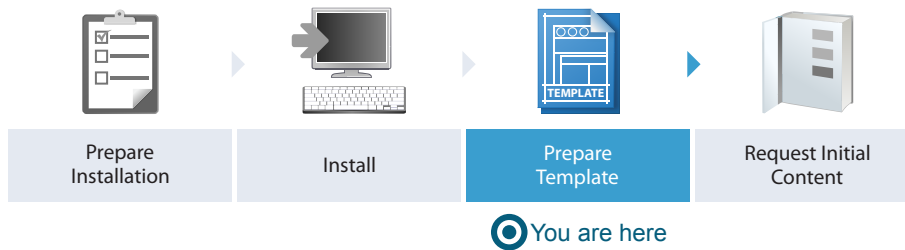
For information about how to join or leave the VMware Customer Experience Improvement Program, see *Managing vRealize Automation*.

What to do next

Prepare a template and customization object in vSphere that you can use to clone machines in vRealize Automation.

Scenario: Prepare vSphere Resources for Machine Provisioning in Rainpole

As the vSphere administrator creating templates for vRealize Automation, you want to use the vSphere Web Client to prepare for cloning CentOS machines in vRealize Automation.



You want to convert an existing CentOS reference machine into a vSphere template so you and your Rainpole architects can create blueprints for cloning CentOS machines in vRealize Automation. To prevent any conflicts that might arise from deploying multiple virtual machines with identical settings, you also want to create a general customization specification that you and your architects can use to create clone blueprints for Linux templates.

Procedure

- 1 [Scenario: Convert Your CentOS Reference Machine into a Template for Rainpole](#) on page 24
Using the vSphere Client, you convert your existing CentOS reference machine into a vSphere template for your vRealize Automation IaaS architects to reference as the base for their clone blueprints.
- 2 [Scenario: Create a Customization Specification for Cloning Linux Machines in Rainpole](#) on page 25
Using the vSphere Client, you create a standard customization specification for your vRealize Automation IaaS architects to use when they create clone blueprints for Linux machines.

Scenario: Convert Your CentOS Reference Machine into a Template for Rainpole

Using the vSphere Client, you convert your existing CentOS reference machine into a vSphere template for your vRealize Automation IaaS architects to reference as the base for their clone blueprints.

Procedure

- 1 Log in to your reference machine as the root user and prepare the machine for conversion.
 - a Remove udev persistence rules.
`/bin/rm -f /etc/udev/rules.d/70*`
 - b Enable machines cloned from this template to have their own unique identifiers.
`/bin/sed -i '/^\(HWADDR\|UUID\)=/d'`
`/etc/sysconfig/network-scripts/ifcfg-eth0`
 - c Power down the machine.
`shutdown -h now`
- 2 Log in to the vSphere Web Client as an administrator.
- 3 Click the **VM Options** tab.
- 4 Right-click your reference machine and select **Edit Settings**.
- 5 Enter **Rainpole_centos_63_x86** in the **VM Name** text box.
- 6 Even though your reference machine has a CentOS guest operating system, select **Red Hat Enterprise Linux 6 (64-bit)** from the **Guest OS Version** drop-down menu.

If you select CentOS, your template and customization specification might not work as expected.

- 7 Right-click your **Rainpole_centos_63_x86** reference machine in the vSphere Web Client and select **Template > Convert to Template**.

vCenter Server marks your **Rainpole_centos_63_x86** reference machine as a template and displays the task in the Recent Tasks pane.

What to do next

To prevent any conflicts that might arise from deploying multiple virtual machines with identical settings, you create a general customization specification that you and your Rainpole architects can use to create clone blueprints for Linux templates.

Scenario: Create a Customization Specification for Cloning Linux Machines in Rainpole

Using the vSphere Client, you create a standard customization specification for your vRealize Automation IaaS architects to use when they create clone blueprints for Linux machines.

Procedure

- 1 On the home page, click **Customization Specification Manager** to open the wizard.
- 2 Click the **New** icon.
- 3 Specify properties.
 - a Select **Linux** from the **Target VM Operating System** drop-down menu.
 - b Enter **Linux** in the **Customization Spec Name** text box.
 - c Enter **Rainpole Linux cloning with vRealize Automation** in the **Description** text box.
 - d Click **Next**.
- 4 Set computer name.
 - a Select **Use the virtual machine name**.
 - b Enter the domain on which cloned machines are going to be provisioned in the **Domain name** text box.
For example, **rainpole.local**.
 - c Click **Next**.
- 5 Configure time zone settings.
- 6 Click **Next**.
- 7 Select **Use standard network settings for the guest operating system, including enabling DHCP on all network interfaces**.
- 8 Follow the prompts to enter the remaining required information.
- 9 On the Ready to complete page, review your selections and click **Finish**.

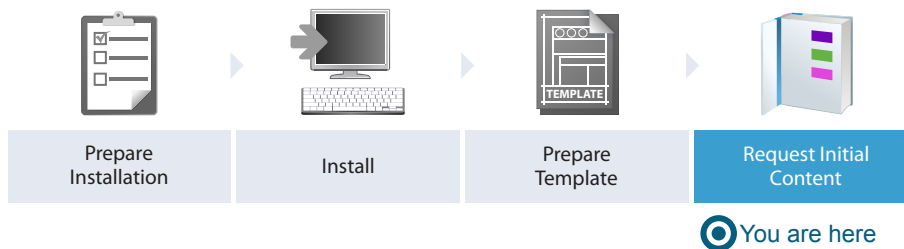
You have a general customization specification that you can use to create blueprints for cloning Linux machines.

What to do next

Log in to the vRealize Automation console as the configuration administrator you created during the installation and request the catalog items that quickly set up your proof of concept.

Scenario: Request Initial Content for a Rainpole Proof of Concept Deployment

Using your configuration administrator privileges, you request a catalog item to quickly populate your Rainpole environment and evaluate a proof of concept vRealize Automation deployment.



During your vRealize Automation installation, you selected to create a configuration administrator and catalog items to deploy your initial content. Now you want to log in to the vRealize Automation console as the configuration administrator user, `configurationadmin`, and request the initial content catalog items. The vSphere initial setup catalog item creates required vRealize Automation elements for you and publishes templates from your vSphere environment as vRealize Automation catalog items that you can request.

Procedure

- 1 [Scenario: Request the vSphere Initial Setup Catalog Item for Rainpole](#) on page 26
As the configuration administrator, you want to request a vRealize Automation catalog item that quickly configures vRealize Automation to manage your vSphere environment for a proof of concept.
- 2 [Scenario: Complete the Initial Content Manual User Action for Rainpole](#) on page 27
Using your configuration administrator privileges, you want to complete the manual user action in your inbox. You select which virtual machine templates you want to import into the catalog and determine which of your vSphere resources those catalog items can consume.

Scenario: Request the vSphere Initial Setup Catalog Item for Rainpole

As the configuration administrator, you want to request a vRealize Automation catalog item that quickly configures vRealize Automation to manage your vSphere environment for a proof of concept.

Procedure

- 1 Navigate to the vRealize Automation console, <https://vra01svr01.rainpole.local/vcac>.
- 2 Enter the configuration administrator username, `configurationadmin`, and password `VMware1!`.
- 3 Select **Catalog**.
- 4 Click **Request** on the vSphere Initial Setup catalog item.
- 5 If prompted, specify that initial content be created in your default tenant.
- 6 Enter description, reason for request, and deployment information on the Deployment page.
- 7 Enter the required information on the General and Storage pages.

- 8 If required, enter the following details for your vSphere environment.

Option	Input
Endpoint name	Rainpole vCenter
Endpoint host	FQDN of the machine on which you installed your vCenter Server. For example, vsphereA.rainpole.local.
Compute resource	Enter the vSphere cluster on which you created the virtual machine template Rainpole_centos_63_x86.
vSphere Endpoint Credentials	Enter the vSphere credentials you prepared for vRealize Automation to manage your vSphere environment.

- 9 Click **Submit**.

The request might take up to 15 minutes to complete. You can monitor the status of your request on the Requests tab.

You submitted the catalog item request. Virtual machine templates on your vSphere compute resource are discovered and some basic vRealize Automation elements are created.

What to do next

When the request is complete, a manual user action appears in your inbox. You need to select which virtual machine templates you want to import into the catalog and determine which of your vSphere resources those catalog items can consume.

Scenario: Complete the Initial Content Manual User Action for Rainpole

Using your configuration administrator privileges, you want to complete the manual user action in your inbox. You select which virtual machine templates you want to import into the catalog and determine which of your vSphere resources those catalog items can consume.

Procedure

- 1 Select **Inbox > Manual User Action**.
- 2 Click **vSphere Initial Setup** to view the initial content manual user action.
- 3 Select the virtual machine template, Rainpole_centos_63_x86, to publish as a catalog item.
If you have other templates on the cluster that you want to make available in the vRealize Automation catalog, you can select them as well.
- 4 Configure vSphere resources for vRealize Automation catalog items to consume.

Option	Description
Reservation storage	Select a datastore on which to provision machines created by using the imported templates.
Reservation network	Select a network on which to provision machines created by using the imported templates.

- 5 Click **Submit**.

Depending on the number of templates you are importing, the request might take a few minutes to finish. You can monitor the status of your request on the Requests tab.

The vSphere Initial Setup catalog item creates required vRealize Automation elements for you. You have a vSphere endpoint, reservation and fabric group, a business group, and a default catalog service. If you navigate to the Catalog page, you can see your default catalog service and the catalog items created from your imported templates.

What to do next

After you are familiar with your proof of concept environment, you want to learn how to create vRealize Automation elements yourself. You begin configuring your Rainpole environment for ongoing development.

Configure a vRealize Automation Development Environment for Rainpole

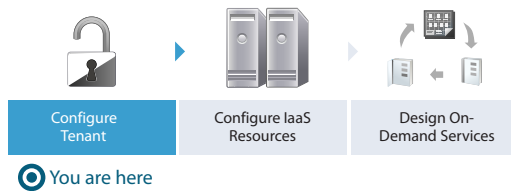
2

After you familiarize yourself with your vRealize Automation proof of concept, you want to configure it as your development environment. You and your IT team can create and test blueprints in this development environment and then export them into your production environment.

- 1 [Scenario: Configure the Default Tenant for Rainpole](#) on page 30
As the system administrator, you want to configure your vRealize Automation instance as an ongoing development environment. You create local user accounts and assign yourself to the tenant administrator role. Using the tenant administrator privileges, you start configuring vRealize Automation as a development environment for building and testing blueprints.
- 2 [Scenario: Configure IaaS Resources for Rainpole](#) on page 35
Using a combination of your IaaS administrator and tenant administrator privileges, you create a prefix to prepend to vSphere machines created in vRealize Automation, organize your vSphere resources into a fabric group, and allocate resources to your custom group of vRealize Automation architects.
- 3 [Scenario: Create a vSphere CentOS Blueprint for Cloning in Rainpole](#) on page 38
Using your IaaS architect privileges, you create and publish a basic blueprint for cloning vSphere CentOS machines.
- 4 [Scenario: Configure the Catalog for Rainpole Architects to Test Blueprints](#) on page 41
Using your tenant administrator privileges, you create a special catalog service that contains very little governance, where your Rainpole architects can efficiently test their work before exporting blueprints into your production environment. You create a Blueprint Testing service, add the vSphere CentOS blueprint to the service, and entitle your Rainpole architects to all catalog items and any actions associated with the service so your architects can verify their work by provisioning catalog items.
- 5 [Scenario: Test Your Rainpole CentOS Machine](#) on page 44
Using the local test user account you created, you request to provision your vSphere CentOS machine. You log in to the provisioned machine and verify that it is working as expected.
- 6 [Scenario: Design and Test a Blueprint to Provision Software on Machines for Rainpole](#) on page 45
Using your software architect and IaaS architect privileges, you create a blueprint to deliver a vSphere CentOS machine with MySQL installed. You prepare your provisioned CentOS machine as a base, and create a new machine blueprint that supports Software. You build a Software component to install MySQL on Linux machines, and deliver the machine blueprint and MySQL component as new blueprint. You test your work by provisioning the MySQL machine.

Scenario: Configure the Default Tenant for Rainpole

As the system administrator, you want to configure your vRealize Automation instance as an ongoing development environment. You create local user accounts and assign yourself to the tenant administrator role. Using the tenant administrator privileges, you start configuring vRealize Automation as a development environment for building and testing blueprints.



Procedure


- 1 [Scenario: Create Local User Accounts for Rainpole](#) on page 30
Using your default system administrator privileges, you create two local user accounts in the default tenant. Assign one of these accounts to the tenant administrator role so you can start configuring the default tenant. You can use the second account later as a shared login for your architects to test blueprint and catalog access.
- 2 [Scenario: Connect Your Corporate Active Directory to vRealize Automation for Rainpole](#) on page 32
As a tenant administrator, you want vRealize Automation to authenticate logins against your corporate active directory. You configure a connection between vRealize Automation and your single domain active directory over LDAP.
- 3 [Scenario: Configure Branding for the Default Tenant for Rainpole](#) on page 33
Using your tenant administrator privileges, you customize the look and feel of the vRealize Automation console. You upload a new logo, change the colors, update the header and footer information, and configure the login screen branding.
- 4 [Scenario: Create a Custom Group for Your Rainpole Architects](#) on page 33
Using your tenant administrator privileges, you create a custom group for members of your IT organization who need highly privileged access to vRealize Automation. You assign roles to this custom group as you configure vRealize Automation.
- 5 [Scenario: Assign IaaS Administrator Privileges to Your Custom Group of Rainpole Architects](#) on page 34
Using your default system administrator privileges, you assign your custom group to the IaaS administrator role to allow the group to configure IaaS resources.

Scenario: Create Local User Accounts for Rainpole


Using your default system administrator privileges, you create two local user accounts in the default tenant. Assign one of these accounts to the tenant administrator role so you can start configuring the default tenant. You can use the second account later as a shared login for your architects to test blueprint and catalog access.

Procedure

- 1 Navigate to the vRealize Automation console, **`https://vra01svr01.rainpole.local/vcac`**.
- 2 Enter the default system administrator username, **`administrator`**, and password, **`VMware1!`**.
- 3 Select **Administration > Tenants**.

- 4 Click **vsphere.local**.
- 5 Select the **Local Users** tab.
- 6 Click the **New** icon ().
- 7 Create a local user account to assign to the tenant administrator role.

Option	Input
First Name	Rainpole
Last Name	tenant admin
Email	Enter your email address or use the placeholder rainpole_tenant_admin@rainpole.com .
Username	Rainpole tenant admin
Password	VMware1!

- 8 Click **OK**.
- 9 Click the **New** icon ().
- 10 Create a local user account that you and your architects can later configure for testing blueprints and catalog access.

Option	Input
First Name	test
Last Name	user
Email	Enter an email address or use the placeholder test_user@rainpole.com .
Username	test_user
Password	VMware1!

- 11 Click **OK**.
- 12 Click the **Administrators** tab.
- 13 Enter **Rainpole** in the **Tenant administrators** search box and press Enter. Select your Rainpole tenant admin user.

The tenant administrator role is assigned to your Rainpole tenant admin user.
- 14 Click **Finish**.
- 15 Log out of the console.

You can use the Rainpole tenant admin local user to access the tenant administration settings and configure your tenant. The test_user account is useful as a shared login for your architects and catalog administrators. They can configure the account as a basic user and verify blueprint and catalog access and test approval behaviors.

What to do next

Configure vRealize Automation to authenticate logins against your existing corporate active directory.


Scenario: Connect Your Corporate Active Directory to vRealize Automation for Rainpole

As a tenant administrator, you want vRealize Automation to authenticate logins against your corporate active directory. You configure a connection between vRealize Automation and your single domain active directory over LDAP.

Procedure

- 1 Navigate to the vRealize Automation console, **<https://vra01svr01.rainpole.local/vcac>**.
- 2 Enter the username **Rainpole tenant admin** and password **VMware1!**.
- 3 Select **Administration > Directories Management > Directories**.
- 4 Click **Add Directory**.
- 5 Enter your specific Active Directory account settings, and accept the default options.

Option	Sample Input
Directory Name	Add the IP address of your active directory domain name.
Sync Connector	vra01svr01.rainpole.local
Base DN	Enter the Distinguished Name (DN) of the starting point for directory server searches. For example, cn=users,dc=rainpole,dc=local .
Bind DN	Enter the full distinguished name (DN), including common name (CN), of an Active Directory user account that has privileges to search for users. For example, cn=config_admin infra,cn=users,dc=rainpole,dc=local .
Bind DN Password	Enter the Active Directory password for the account that can search for users.

- 6 Click the **Test Connection** button to test the connection to the configured directory.
- 7 Click **Save & Next**.
The Select the Domains page with the list of domains appears.
- 8 Accept the default domain setting and click **Next**.
- 9 Verify that the attribute names are mapped to the correct Active Directory attributes and click **Next**.
- 10 Select the groups and users you want to sync.
 - a Click the **Add** icon (.
 - b Enter the user domain and click **Find Groups**.
For example, **cn=users,dc=rainpole,dc=local**.
 - c Select the **Select All** check box.
 - d Click **Select**.
 - e Click **Next**.
 - f Accept the defaults on the Select Users page and click **Next**.
- 11 Review the page to see how many users and groups are syncing to the directory and click **Sync Directory**.

The directory sync process takes some time, but it happens in the background and you can continue working.

You can assign privileges and grant access to any of the Active Directory users and groups you synced to vRealize Automation.

What to do next

Using your tenant administrator privileges, customize the look and feel of the vRealize Automation console.

Scenario: Configure Branding for the Default Tenant for Rainpole

Using your tenant administrator privileges, you customize the look and feel of the vRealize Automation console. You upload a new logo, change the colors, update the header and footer information, and configure the login screen branding.

Procedure

- 1 Select **Administration > Branding > Header & Footer Branding**.
- 2 Deselect the **Use default** check box.
- 3 Follow the prompts to create a header.
- 4 Click **Next**.
- 5 Follow the prompts to create a footer.
- 6 Click **Finish**.

The console is updated with your changes.

- 7 Select **Administration > Branding > Login Screen Branding**.
- 8 Follow the prompts to customize the login screen branding.
- 9 Click **Save**.

The console is updated with your changes.

You updated the look and feel of the console for the default tenant.

What to do next


Create a custom group for members of your IT organization who need highly privileged access to vRealize Automation.

Scenario: Create a Custom Group for Your Rainpole Architects

Using your tenant administrator privileges, you create a custom group for members of your IT organization who need highly privileged access to vRealize Automation. You assign roles to this custom group as you configure vRealize Automation.

If you want to add or disable this high-level access for users, you can change the membership of the group instead of editing settings for each user in multiple locations.

Procedure

- 1 Select **Administration > Users & Groups > Custom Groups**.
- 2 Click the **New** icon ()
- 3 Enter **Rainpole architects** in the **Name** text box.

- 4 Select roles from the Add Roles to this Group list.

You cannot assign IaaS administrator, fabric administrator, business group manager, or business user roles on this page. You assign those roles while you configure vRealize Automation.

Option	Description
Tenant administrator	Responsible for user and group management, tenant branding and notifications, and business policies such as approvals and entitlements. They also track resource usage by all users within the tenant and initiate reclamation requests for virtual machines.
Infrastructure (IaaS) architect	Create and manage machine blueprints and application blueprints.
XaaS architect	For Advanced and Enterprise licensed users, create and manage XaaS blueprints.
Software architect	For Enterprise licensed users, create and manage software components and application blueprints.

- 5 Click **Next**.
- 6 Search for corporate active directory users and select users to add to your custom group.

You assign yourself and anyone who needs an extremely high level of access to your vRealize Automation development environment to this group.

- 7 Click **Finish**.

You granted your custom group the rights to manage the default tenant, create blueprints, and manage the service catalog. As you configure vRealize Automation, you add permissions and roles to your custom group.

What to do next

Assign your custom group to the IaaS administrator role.

Scenario: Assign IaaS Administrator Privileges to Your Custom Group of Rainpole Architects

Using your default system administrator privileges, you assign your custom group to the IaaS administrator role to allow the group to configure IaaS resources.

Procedure

- 1 Log out of the vRealize Automation console.
- 2 Select the **vsphere.local** domain and click **Next**.
- 3 Enter the default system administrator username, **administrator**, and password, **vmware**.
- 4 Select **Administration > Tenants**.
- 5 Click the default tenant name **vsphere.local**.
- 6 Click the **Administrators** tab.
- 7 Search for **Rainpole architects** in the **IaaS administrators** search box and select your custom group.
- 8 Click **Finish**.
- 9 Log out of the console.

Any member of your custom group can now manage cloud, virtual, networking, and storage infrastructure for all tenants in your vRealize Automation instance. You can update membership of the group at any time to grant or revoke these privileges.

What to do next

Using the IaaS administrator privileges you granted your custom group, you can configure your IaaS resources.

Scenario: Configure IaaS Resources for Rainpole

Using a combination of your IaaS administrator and tenant administrator privileges, you create a prefix to prepend to vSphere machines created in vRealize Automation, organize your vSphere resources into a fabric group, and allocate resources to your custom group of vRealize Automation architects.



Procedure

- 1 [Scenario: Create a Fabric Group for Rainpole](#) on page 35
Using your IaaS administrator privileges, you create a fabric group that contains the compute resources discovered when you created the vSphere endpoint. Assign your custom group of vRealize Automation architects and developers to the fabric administrator role for this group.
- 2 [Scenario: Configure Machine Prefixes for Rainpole](#) on page 36
Using your fabric administrator privileges, you create a prefix that you can configure to prepend to machines provisioned by your vRealize Automation architects and developers during development and testing.
- 3 [Scenario: Create a Business Group for Your Rainpole Architects to Test Catalog Items](#) on page 36
Using your tenant administrator privileges, you create a business group for the IT team responsible for designing and testing vRealize Automation blueprints.
- 4 [Scenario: Create a Reservation to Assign Resources to Your Rainpole Architects](#) on page 37
Using your fabric administrator privileges, you create a reservation for your Rainpole business group to allocate them vSphere resources.

Scenario: Create a Fabric Group for Rainpole

Using your IaaS administrator privileges, you create a fabric group that contains the compute resources discovered when you created the vSphere endpoint. Assign your custom group of vRealize Automation architects and developers to the fabric administrator role for this group.

You do not need to create a vSphere endpoint, because you already created one when you requested the initial content catalog item.

Procedure

- 1 Select **Infrastructure > Fabric Groups**.
- 2 Click the **New** icon (+).
- 3 Enter **Rainpole fabric** in the Name text box.
- 4 Search for **Rainpole architects** in the **Fabric administrators** search box and select your custom group.
- 5 Select the compute resource from your vSphere environment to include in your fabric group.

- 6 Click **OK**.
- 7 Refresh your browser to view the new menu options available to you as a fabric administrator.


What to do next

Using your fabric administrator privileges, you create a machine prefix for your Rainpole architects to use so any machines they provision during development and testing are easily identified.

Scenario: Configure Machine Prefixes for Rainpole

Using your fabric administrator privileges, you create a prefix that you can configure to prepend to machines provisioned by your vRealize Automation architects and developers during development and testing.

Procedure

- 1 Select **Infrastructure > Administration > Machine Prefixes**.
- 2 Click **New**.
- 3 Enter **Rainpole** in the **Machine Prefix** text box.
- 4 Enter **3** in the **Number of Digits** text box.
- 5 Enter **1** in the **Next Number** text box.
- 6 Click the **Save** icon (.


What to do next

Using your tenant administrator privileges, you create a business group for the IT team that is responsible for designing and testing your vRealize Automation blueprints.

Scenario: Create a Business Group for Your Rainpole Architects to Test Catalog Items

Using your tenant administrator privileges, you create a business group for the IT team responsible for designing and testing vRealize Automation blueprints.

Procedure

- 1 Select **Administration > Users and Groups > Business Groups**.
- 2 Click the **New** icon (.
- 3 Enter **Rainpole business group** in the **Name** text box.
- 4 Enter one or more email addresses in the **Send manager emails to** text box.
For example, enter your own email address, or the email address of your IT manager.
- 5 Add a custom property to assist your architects with troubleshooting their blueprints.
 - a Click the **New** icon (.
 - b Enter **_debug_deployment** in the **Name** text box.

- c Enter **true** in the **Value** text box.
- d Select **Prompt User** to allow your architects to turn this feature on or off when they request a catalog item.

Typically, if one component of a catalog item fails to provision vRealize Automation rolls back all resources for the whole catalog item. You use this custom property to override that behavior so your architects can pinpoint where their blueprints are failing. You add this custom property to the business group instead of the blueprints to ensure that architects can always choose to override this behavior, but the choice is never accidentally provided to users.

- 6 Click **Next**.
- 7 Search **Rainpole architects** in the **Group manager role** search box and select your custom group.
- 8 Search **test_user** in the **User role** search box and select the local user you set up as a shared login for testing blueprints.
- 9 Click **Next**.
- 10 Select **Rainpole** as the default machine prefix from the drop-down menu.
- 11 Click **Finish**.

What to do next


Using your fabric administrator privileges, you allocate IaaS resources to your Rainpole business group by creating a reservation.

Scenario: Create a Reservation to Assign Resources to Your Rainpole Architects

Using your fabric administrator privileges, you create a reservation for your Rainpole business group to allocate them vSphere resources.

NOTE After you create a reservation, you cannot change the business group or the compute resource.

Procedure

- 1 Select **Infrastructure > Reservations > Reservations**.
- 2 Click the **New** icon ()
- 3 Select **vSphere** from the drop-down menu.
- 4 Enter the reservation information.

Option	Input
Name	Rainpole reservation
Tenant	vsphere.local
Business Group	Rainpole business group
Priority	1

- 5 Select the **Resources** tab.
- 6 Enter the resources information from your deployment environment.

Option	Input
Compute resources	Select a resource cluster from the drop-down menu.
Machine quota	Specify the maximum number of powered on machines for this reservation.

Option	Input
Memory	Specify the maximum amount of memory (MB) this reservation can consume.
Storage	Select one or more storage paths and reserve space (GB) for this reservation. Prioritize the storage paths, with 1 being the highest priority.

- 7 Select the **Network** tab.
- 8 Select at least one vSphere network path.
- 9 Click **OK**.

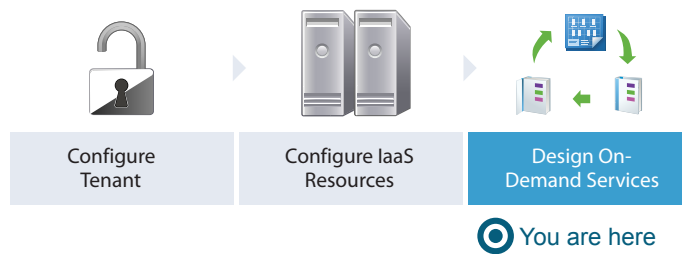
You have brought your vSphere infrastructure under vRealize Automation management and allocated vSphere resources to your team.

What to do next

Using your IaaS architect privileges, you create a machine blueprint to clone vSphere CentOS machines.

Scenario: Create a vSphere CentOS Blueprint for Cloning in Rainpole

Using your IaaS architect privileges, you create and publish a basic blueprint for cloning vSphere CentOS machines.



After you publish your blueprint, other architects can reuse it as a component in new blueprints. No one can see or request your blueprint from the catalog until you use your tenant administrator privileges to make it available for request.

Procedure

- 1 [Scenario: Create a Blueprint for Your Rainpole Machine Component](#) on page 39
Using your IaaS architect privileges, create a blueprint and configure the name and description for your vSphere CentOS machine blueprint. A unique identifier is applied to the blueprint, so you can programmatically interact with blueprints or create property bindings if you need to. You want users to have some flexibility with their blueprint leases, so you configure the blueprint to allow users to choose their lease duration for up to a month.
- 2 [Scenario: Configure General Details for Your Rainpole Machine Component](#) on page 39
Using your IaaS architect privileges, you drag a vSphere machine component onto the design canvas and configure the general details for machines provisioned by using your blueprint.
- 3 [Scenario: Specify Build Information for Your Rainpole Machine Component](#) on page 40
Using your IaaS architect privileges, you configure your blueprint to clone machines from the CentOS template you created in vSphere.
- 4 [Scenario: Configure Machine Resources for Your Rainpole Machines](#) on page 40
Using your IaaS architect privileges, you give users minimum and maximum parameters for memory and the number of allowed CPU's. This conserves resources, but also accommodates your user's needs.

Scenario: Create a Blueprint for Your Rainpole Machine Component

Using your IaaS architect privileges, create a blueprint and configure the name and description for your vSphere CentOS machine blueprint. A unique identifier is applied to the blueprint, so you can programmatically interact with blueprints or create property bindings if you need to. You want users to have some flexibility with their blueprint leases, so you configure the blueprint to allow users to choose their lease duration for up to a month.

Procedure

- 1 Select **Design > Blueprints**.
- 2 Click the **New** icon (+).
- 3 Enter **Centos on vSphere** in the **Name** text box.
- 4 Review the generated unique identifier.

You can edit this field now, but after you save the blueprint you can never change it. Because identifiers are permanent and unique within your tenant, you can use them to programmatically interact with blueprints and to create property bindings.

The identifier field automatically populates based on the name you entered.

- 5 Enter **Golden Standard CentOS machine configuration** in the **Description** text box.
- 6 Configure a lease range for users to choose from by entering **1** in the **Minimum** text box and **30** in the **Maximum** text box.
- 7 Click **OK**.

What to do next

You drag a vSphere machine component onto the canvas and configure it to clone the CentOS template you created in vSphere.

Scenario: Configure General Details for Your Rainpole Machine Component

Using your IaaS architect privileges, you drag a vSphere machine component onto the design canvas and configure the general details for machines provisioned by using your blueprint.

Only IaaS architects are allowed to configure machine components. Application and Software architects are only allowed to use machine components by reusing the published machine blueprints that you create.

Procedure

- 1 Click the **Machine Types** category in the left navigation pane.
Machine component types appear in the lower panel.
- 2 Drag and drop a vSphere machine component onto the canvas.
- 3 Enter **Golden Standard CentOS Machine** in the **Description** text box.
- 4 Select **Use group default** from the **Machine prefix** drop-down menu.

If you plan to import these blueprints into your other environments, selecting the group default instead of the specific Rainpole prefix prevents you from configuring your blueprint to work with a machine prefix that might not be available.

What to do next

You configure the machine component to clone machines from the CentOS template you created.

Scenario: Specify Build Information for Your Rainpole Machine Component

Using your IaaS architect privileges, you configure your blueprint to clone machines from the CentOS template you created in vSphere.

You configure your machine component to perform the clone action, and select the template you created as the object to clone from. You specify the customization specification you created to prevent any conflicts that might arise if you deploy multiple virtual machines with identical settings.

Procedure

- 1 Click the **Build Information** tab.
- 2 Select whether machines provisioned from this blueprint are classified as Desktop or Server from the **Blueprint type** drop-down menu.
This information is for record-keeping and licensing purposes only.
- 3 Select **Clone** from the **Action** drop-down menu.
- 4 Select **CloneWorkflow** from the **Provisioning workflow** drop-down menu.
- 5 Click the **Browse** icon next to the **Clone from** text box.
- 6 Select **Rainpole_centos_63_x86** to clone machines from the template you created in vSphere.
- 7 Click **OK**.
- 8 Enter **Linux** in the **Customization spec** text box to use the customization specification you created in vSphere.

NOTE This value is case sensitive.

What to do next

You configure CPU, memory, and storage settings for machines provisioned by using your blueprint.

Scenario: Configure Machine Resources for Your Rainpole Machines

Using your IaaS architect privileges, you give users minimum and maximum parameters for memory and the number of allowed CPU's. This conserves resources, but also accommodates your user's needs.

Software architects and application architects are not allowed to configure machine components, but they can reuse blueprints that contain machines components. When you finish editing your machine component, you publish your blueprint so other architects can reuse your machine blueprint to design their own catalog items. Your published blueprint is also available to catalog administrators and tenant administrators to include in the service catalog.

Procedure

- 1 Click the **Machine Resources** tab.
- 2 Specify CPU settings for provisioned machines.
 - a Enter **1** in the **Minimum** text box.
 - b Enter **4** in the **Maximum** text box.
- 3 Specify memory settings for provisioned machines.
 - a Enter **1024** in the **Minimum** text box.
This field is automatically populated based on the memory of your template.
 - b Enter **4096** in the **Maximum** text box.

- 4 Specify storage settings for provisioned machines.

Some storage information is populated based on the configuration of your template, but you can add additional storage.

- a Click the **New** icon (+).
- b Enter **10** in the **Capacity (GB)** text box.
- c Click **OK**.

- 5 Click **Finish**.

- 6 Select the row containing CentOS on vSphere and click **Publish**.

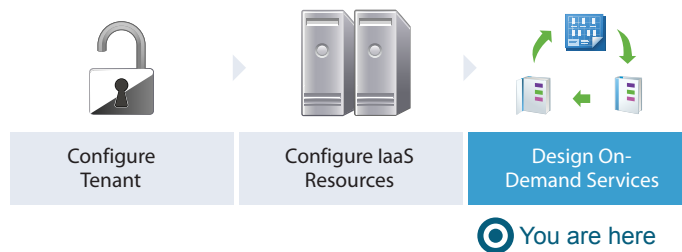
You created a catalog-ready blueprint to deliver cloned vSphere CentOS machines to your users and to reuse in other blueprints as the standard for CentOS machines.

What to do next

Using your tenant administrator privileges, create a catalog service for architects to validate their blueprints. Publish your CentOS on vSphere machine blueprint as a catalog item and request it to verify your work.

Scenario: Configure the Catalog for Rainpole Architects to Test Blueprints

Using your tenant administrator privileges, you create a special catalog service that contains very little governance, where your Rainpole architects can efficiently test their work before exporting blueprints into your production environment. You create a Blueprint Testing service, add the vSphere CentOS blueprint to the service, and entitle your Rainpole architects to all catalog items and any actions associated with the service so your architects can verify their work by provisioning catalog items.



Procedure

- 1 [Scenario: Create a Catalog Service for Rainpole Blueprint Testing](#) on page 42

Using your tenant administrator privileges, you create a catalog service called Rainpole service. You assign yourself as the owner and support contact for this service, so your Rainpole architects can contact you with any problems.

- 2 [Scenario: Add Your vSphere CentOS Catalog Item to the Rainpole Service](#) on page 42

Using your tenant administrator privileges, you add the published vSphere CentOS machine blueprint to your Rainpole service.


- 3 [Scenario: Entitle Your Rainpole Architects to Request Catalog Items](#) on page 43

Using your tenant administrator privileges, entitle your Rainpole architects to all actions and items that belong to the Rainpole service.

Scenario: Create a Catalog Service for Rainpole Blueprint Testing

Using your tenant administrator privileges, you create a catalog service called Rainpole service. You assign yourself as the owner and support contact for this service, so your Rainpole architects can contact you with any problems.

Procedure

- 1 Select **Administration > Catalog Management > Services**.
- 2 Click the **New** icon ().
- 3 Enter the name **Rainpole service**.
- 4 In the Status drop-down menu, select **Active**.
- 5 As the tenant administrator who is creating the service, use the search option to add yourself as the Owner and Support Team.
- 6 Click **OK**.

What to do next


Using your tenant administrator privileges, add the published vSphere CentOS machine blueprint to your Rainpole service.

Scenario: Add Your vSphere CentOS Catalog Item to the Rainpole Service

Using your tenant administrator privileges, you add the published vSphere CentOS machine blueprint to your Rainpole service.

All published blueprints that you want to provision must be part of a service as a catalog item, but each blueprint can only be a catalog item in one service at a time. If you need to publish to multiple catalog services at the same time, create copies of your blueprint.

Procedure

- 1 Select **Administration > Catalog Management > Services**.
- 2 In the Services list, select the Blueprint Testing row and click **Manage Catalog Items**.
- 3 Click the **New** icon ().
- 4 Select the check box for **CentOS on vSphere**.

Only published blueprints and components that are not yet associated with a service appear in the list. If you do not see the blueprint, verify that it was published or that it is not included in another service.

- 5 Click **OK**.
- 6 Click **Close**.

What to do next

Using your tenant administrator privileges, entitle your Rainpole architects to request catalog items from the Rainpole service.

Scenario: Entitle Your Rainpole Architects to Request Catalog Items

Using your tenant administrator privileges, entitle your Rainpole architects to all actions and items that belong to the Rainpole service.

By entitling your Rainpole architects to all actions and items in the service, you make it easier for them to add new catalog items to the service for testing. In a production environment, you might use entitlements differently and configure strict governance. You might want to manage which catalog items each user is allowed to request and which actions they can perform against specific catalog items that they own.

Procedure

- 1 Select **Administration > Catalog Management > Entitlements**.
- 2 Click the **New** icon (+).
- 3 Configure the details.
 - a Enter the name **Rainpole architect entitlement**
 - b Select **Active** from the **Status** drop-down menu.
 - c Select the your Rainpole business group from the **Business Group** drop-down menu.
 - d Add your Rainpole architects by using the **Users & Groups** search box.
 - e Click **Next**.
- 4 Entitle the Rainpole catalog service.
 - a Click the **Add Services** icon (+) beside the Entitled Services heading.
 - b Select **Rainpole service**.
 - c Click **OK**.

All the users you included on the entitlement are now entitled to all catalog items in the Rainpole service.
- 5 Entitle all user actions.
 - a Click the **Add Actions** icon (+) beside the Entitled Actions heading.
 - b Select the checkbox in the column header to entitle all actions.
 - c Select the **Actions only apply to items in this entitlement** checkbox so you can later apply stricter governance to these users in other catalog services.
 - d Click **OK**.

Your architects are entitled to perform any applicable action on catalog items they provision from your Rainpole service. They are not entitled to perform these actions on any items they might provision from a different service or through a different entitlement.
- 6 Click **Finish**.

All of your architects can now see and request the vSphere CentOS machine blueprint and any new catalog items that are added to their service.

What to do next

Using the local test user account you set up, request to provision the vSphere CentOS catalog item to test the blueprint and your catalog configuration.

Scenario: Test Your Rainpole CentOS Machine

Using the local test user account you created, you request to provision your vSphere CentOS machine. You log in to the provisioned machine and verify that it is working as expected.



Procedure

- 1 [Scenario: Request Your Rainpole Virtual Machine](#) on page 44
Using your test user account, you request the service catalog item to provision a CentOS on vSphere virtual machine.
- 2 [Scenario: Log in to the Provisioned Rainpole Machine](#) on page 44
Using the test user account, you log in to your successfully provisioned vSphere CentOS machine.

Scenario: Request Your Rainpole Virtual Machine

Using your test user account, you request the service catalog item to provision a CentOS on vSphere virtual machine.

Procedure

- 1 Log out of the vRealize Automation console.
- 2 Log back in with the username **test_user** and password **VMware1!**.
- 3 Click the **Catalog** tab.
- 4 Click the **Request** button to request a catalog item.
- 5 Enter **verifying functionality** in the **Description** text box.
- 6 Click **Submit** to request the catalog item.
- 7 Click the **Requests** tab to monitor the status of your request.

When the machine is successfully provisioned, the status message **Successful** appears.

What to do next

Log in to your provisioned machine.

Scenario: Log in to the Provisioned Rainpole Machine

Using the test user account, you log in to your successfully provisioned vSphere CentOS machine.

Procedure

- 1 Select **Items > Machines**.
- 2 Select the arrow next to the CentOS on vSphere item.
The provisioned machine appears under the expanded item.

- 3 Click the provisioned machine.
- 4 Click **Remote Log in to Machine** on the right-hand panel.
- 5 Log in to the machine.

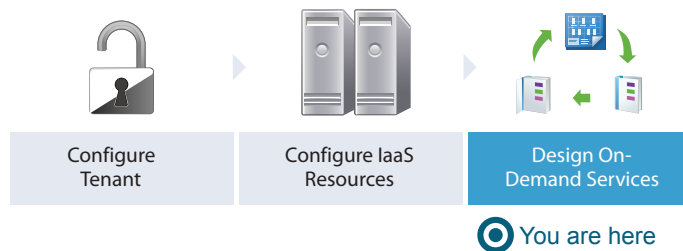
You installed vRealize Automation in a minimal deployment, set up a proof of concept, and configured your environment for ongoing development of blueprints.

What to do next

- If you purchased a vRealize Automation enterprise license, you can continue reading to learn about provisioning machines with software components.
- Plan for installing a production environment. See *Reference Architecture*.
- Learn about more options for configuring vRealize Automation, designing and exporting blueprints, and governing your service catalog. See *Configuring vRealize Automation*.

Scenario: Design and Test a Blueprint to Provision Software on Machines for Rainpole

Using your software architect and IaaS architect privileges, you create a blueprint to deliver a vSphere CentOS machine with MySQL installed. You prepare your provisioned CentOS machine as a base, and create a new machine blueprint that supports Software. You build a Software component to install MySQL on Linux machines, and deliver the machine blueprint and MySQL component as new blueprint. You test your work by provisioning the MySQL machine.



Procedure

- 1 [Scenario: Install the Guest Agent and Software Bootstrap Agent on Your Rainpole Machine](#) on page 46
Using your business group manager privileges, you log in to the Rainpole001 machine you provisioned as the test user. You install the guest agent and the Software bootstrap agent on your machine to prepare for Software provisioning. When you finish, take a snapshot of the machine to use as the base for cloning machines to use with Software components.
- 2 [Scenario: Create a Linked Clone Blueprint Based on Your Rainpole Snapshot](#) on page 47
Using your IaaS architect privileges, you want to provide software architects with space-efficient copies of the provisioned CentOS machine you prepared.
- 3 [Scenario: Create a MySQL Software Component for Rainpole](#) on page 47
Using your software architect privileges, create a MySQL Software component to install MySQL on vSphere CentOS machines. When you design the MySQL Software component for a CentOS virtual machine, you configure the install, configure, and start parameters, and the scripts for Linux operating systems.

- 4 [Scenario: Create a Container for Your MySQL on CentOS Rainpole Blueprint](#) on page 54
Using your IaaS, software, or application architect privileges, create a blueprint container and configure the name, description, and unique identifier for your MySQL on CentOS vSphere blueprint.
- 5 [Scenario: Add Software and a Machine to the MySQL on CentOS Blueprint for Rainpole](#) on page 55
Using your IaaS, software, or application architect privileges, drag the published CentOS for Software Testing machine blueprint onto your canvas to reuse that blueprint as your machine. You drag your published software component onto the virtual machine and configure the Software properties you specified in the Software component.
- 6 [Scenario: Add Your CentOS with MySQL Catalog Item to the Rainpole Service](#) on page 55
Using your tenant administrator privileges, add your new blueprint to the Rainpole catalog service so you can verify your work.
- 7 [Scenario: Provision the CentOS with MySQL Catalog Item for Rainpole](#) on page 56
Using the test user account, request the service catalog item to provision a CentOS machine with MySQL.

Scenario: Install the Guest Agent and Software Bootstrap Agent on Your Rainpole Machine

Using your business group manager privileges, you log in to the Rainpole001 machine you provisioned as the test user. You install the guest agent and the Software bootstrap agent on your machine to prepare for Software provisioning. When you finish, take a snapshot of the machine to use as the base for cloning machines to use with Software components.

Procedure

- 1 Select **Items > Machines**.
- 2 Click your CentOS on vSphere item to view item details.
- 3 Click **Connect to Remote Console** from the Actions menu on the right.
- 4 Log in to the machine as the root user.
- 5 Download the installation script from your vRealize Automation appliance.

```
wget https://vRealize_VA_Hostname_fqdn/software/download/prepare_vra_template.sh
```

If your environment is using self-signed certificates, you might have to use the wget option `--no-check-certificate` option. For example:

```
wget --no-check-certificate https://vRealize_VA_Hostname_fqdn/software/download/prepare_vra_template.sh
```
- 6 Make the `prepare_vra_template.sh` script executable.

```
chmod +x prepare_vra_template.sh
```
- 7 Run the `prepare_vra_template.sh` installer script.

```
./prepare_vra_template.sh
```

You can run the help command `./prepare_vra_template.sh --help` for information about non-interactive options and expected values.
- 8 Follow the prompts to complete the installation.

You see a confirmation message when the installation is successfully completed. If you see an error message and logs in the console, resolve the errors and run the installer script again.

- 9 Return to the vRealize Automation console and create the snapshot.
 - a Click **Create Snapshot** from the Actions menu on the right and follow the prompts.
 - b Click the **Snapshots** tab to monitor the process.

You installed the software bootstrap agent and the guest agent so your snapshot can be used as the clone base in blueprints that contain software components.

Scenario: Create a Linked Clone Blueprint Based on Your Rainpole Snapshot

Using your IaaS architect privileges, you want to provide software architects with space-efficient copies of the provisioned CentOS machine you prepared.

You copy your existing CentOS on vSphere blueprint as a starting point, and edit the copy to create linked clone copies of the snapshot you prepared. Linked clones use a chain of delta disks to track differences from a parent machine. They are provisioned quickly, reduce storage cost, and are ideal to use when performance is not a high priority.

Procedure

- 1 Select **Design > Blueprints**.
- 2 Select the row that contains CentOS on vSphere and click **Copy**.
You created an independent copy of the CentOS on vSphere machine blueprint.
- 3 Enter **CentOS for Software Testing** in the **Name** text box.
- 4 Enter **Space-efficient vSphere CentOS for software testing** in the **Description** text box.
- 5 Click **OK**.
- 6 Select the machine component on your canvas to edit the details.
- 7 Click the **Build Information** tab.
- 8 Select **Linked Clone** from the **Action** drop-down menu.
- 9 Click the **Browse** icon next to the **Clone from** text box.
- 10 Select the provisioned machine **Rainpole001** on which you installed the software bootstrap and guest agents.
- 11 Select your snapshot from the **Clone from snapshot** drop-down menu.
- 12 Click **Finish**.
- 13 Select the row that contains CentOS for Software Testing and click **Publish**.

You created a linked clone blueprint that you and your architects can use to deliver software on CentOS machines.

What to do next


Use your software architect privileges to create a Software component for installing MySQL.

Scenario: Create a MySQL Software Component for Rainpole

Using your software architect privileges, create a MySQL Software component to install MySQL on vSphere CentOS machines. When you design the MySQL Software component for a CentOS virtual machine, you configure the install, configure, and start parameters, and the scripts for Linux operating systems.

Procedure

- 1 Select **Design > Software Components**.

- 2 Click the **New** icon ().
- 3 Enter **MySQL for Linux Virtual Machines** in the **Name** text box.
- 4 Verify that the identifier populates based on the provided name.
For example, Software.MySQLforLinuxVirtualMachines
- 5 Enter **MySQL installation and configuration** in the **Description** text box.
- 6 Select **Machine** from the **Container** drop-down menu.

Because you only want MySQL to install directly on a machine, you restrict architects from dropping your MySQL Software component on top of other Software components.
- 7 Click **Next**.
- 8 Click **New** and add and configure each of the following properties for the installation script.

Click **OK** to save each property.

Architects can configure your Software properties to show to users in the request form. Architects can use the Show in Request option to require or request that users fill in values for properties that you mark as overridable.

Name	Description	Type	Value	Encrypted	Allow Override	Required	Computed
db_root_username	Database root user name	String	root	No	Yes	Yes	No
JAVA_HOME	The directory in which JRE 1.8 or later is installed	String	/opt/vmware-jre	No	Yes	Yes	No
global_ftp_proxy	FTP proxy URL, if any. Not required.	String		No	Yes	No	No
db_port	MySQL database port	String		No	Yes	Yes	No
db_root_password	Database root user password	String	password	Yes	Yes	Yes	No
global_http_proxy	HTTP proxy URL, if any. Not required.	String		No	Yes	No	No
global_https_proxy	HTTPS proxy URL, if any. Not required.	String		No	Yes	No	No
max_allowed_packet_size	Server max allowed packet size	Integer	1024	No	Yes	No	No

- 9 Click **Next**.

- 10 Configure the Install action.
 - a Select **Bash** from the **Script Type** drop-down menu.
 - b Click **Click here to edit**.

- c Paste the following script.

```
#!/bin/bash

#Setting proxies
export ftp_proxy=${ftp_proxy:-$global_ftp_proxy}
echo "Setting ftp_proxy to $ftp_proxy"

export http_proxy=${http_proxy:-$global_http_proxy}
echo "Setting http_proxy to $http_proxy"

export https_proxy=${https_proxy:-$global_https_proxy}
echo "Setting https_proxy to $https_proxy"

#
# Determine operating system and version
#
export OS=
export OS_VERSION=

if [ -f /etc/redhat-release ]; then
    # For CentOS the result will be 'CentOS'
    # For RHEL the result will be 'Red'
    OS=$(cat /etc/redhat-release | awk '{print $1}')

    if [ -n $OS ] && [ $OS = 'CentOS' ]; then
        OS_VERSION=$(cat /etc/redhat-release | awk '{print $3}')
    else
        # RHEL
        OS_VERSION=$(cat /etc/redhat-release | awk '{print $7}')
    fi

elif [ -f /etc/SuSE-release ]; then
    OS=SuSE

    MAJOR_VERSION=$(cat /etc/SuSE-release | grep VERSION | awk '{print $3}')
    PATCHLEVEL=$(cat /etc/SuSE-release | grep PATCHLEVEL | awk '{print $3}')

    OS_VERSION="$MAJOR_VERSION.$PATCHLEVEL"

elif [ -f /usr/bin/lsb_release ]; then
    # For Ubuntu the result is 'Ubuntu'
    OS=$(lsb_release -a 2> /dev/null | grep Distributor | awk '{print $3}')
    OS_VERSION=$(lsb_release -a 2> /dev/null | grep Release | awk '{print $2}')

fi

echo "Using operating system '$OS' and version '$OS_VERSION'"

if [ "x${global_http_proxy}" == "x" ] || [ "x${global_https_proxy}" == "x" ] ||
[ "x${global_ftp_proxy}" == "x" ]; then
    echo ""
    echo "#####"
    echo "# One or more PROXY(s) not set. Network downloads may fail #"
    echo "#####"
    echo ""
```

```

fi

export PATH=$PATH:
$JAVA_HOME/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
set -e

# Tested on CentOS
if [ -x /usr/sbin/selinuxenabled ] && /usr/sbin/selinuxenabled; then
    # SELinux can be disabled by setting "/usr/sbin/setenforce Permissive"
    echo 'SELinux is enabled on this VM template. This service requires SELinux to be
disabled to install successfully'
    exit 1
fi

if [ "$OS" != "x" ] && [ "$OS" = 'Ubuntu' ]; then
    # Fix the linux-firmware package
    export DEBIAN_FRONTEND=noninteractive
    apt-get install -y linux-firmware < /dev/console > /dev/console
    # Install MySQL package
    apt-get install -y mysql-server
else
    yum --nogpgcheck --noplugins -y install -x MySQL-server-community mysql-server
fi

# Set Install Path to the default install path (For monitoring)
Install_Path=/usr
echo Install_Path is set to $Install_Path, please modify this script if the install path
is not correct.

```

- d Click **OK**.
- 11 Configure the Configure action.
 - a Select **Bash** from the **Script Type** drop-down menu.
 - b Click **Click here to edit**.

- c Paste the following script.

```
#!/bin/bash

#Setting proxies
export ftp_proxy=${ftp_proxy:-$global_ftp_proxy}
echo "Setting ftp_proxy to $ftp_proxy"

export http_proxy=${http_proxy:-$global_http_proxy}
echo "Setting http_proxy to $http_proxy"

export https_proxy=${https_proxy:-$global_https_proxy}
echo "Setting https_proxy to $https_proxy"

#
# Determine operating system and version
#
export OS=
export OS_VERSION=

if [ -f /etc/redhat-release ]; then
    # For CentOS the result will be 'CentOS'
    # For RHEL the result will be 'Red'
    OS=$(cat /etc/redhat-release | awk '{print $1}')

    if [ -n $OS ] && [ $OS = 'CentOS' ]; then
        OS_VERSION=$(cat /etc/redhat-release | awk '{print $3}')
    else
        # RHEL
        OS_VERSION=$(cat /etc/redhat-release | awk '{print $7}')
    fi

elif [ -f /etc/SuSE-release ]; then
    OS=SuSE

    MAJOR_VERSION=$(cat /etc/SuSE-release | grep VERSION | awk '{print $3}')
    PATCHLEVEL=$(cat /etc/SuSE-release | grep PATCHLEVEL | awk '{print $3}')

    OS_VERSION="$MAJOR_VERSION.$PATCHLEVEL"

elif [ -f /usr/bin/lsb_release ]; then
    # For Ubuntu the result is 'Ubuntu'
    OS=$(lsb_release -a 2> /dev/null | grep Distributor | awk '{print $3}')
    OS_VERSION=$(lsb_release -a 2> /dev/null | grep Release | awk '{print $2}')

fi

echo "Using operating system '$OS' and version '$OS_VERSION'"

if [ "x${global_http_proxy}" == "x" ] || [ "x${global_https_proxy}" == "x" ] ||
[ "x${global_ftp_proxy}" == "x" ]; then
    echo ""
    echo "#####"
    echo "# One or more PROXY(s) not set. Network downloads may fail #"
    echo "#####"
    echo ""
```

```

fi

export PATH=$PATH:
$JAVA_HOME/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
set -e

# Locate the my.cnf file
my_cnf_file=
if [ -f /etc/my.cnf ]; then
    my_cnf_file=/etc/my.cnf
elif [ -f /etc/mysql/my.cnf ]; then
    my_cnf_file=/etc/mysql/my.cnf
fi

if [ "x$my_cnf_file" = "x" ]; then
    echo "Neither /etc/my.cnf nor /etc/mysql/my.cnf can be found, stopping configuration"
    exit 1
fi

# update mysql configuration to handle big packets
sed -ie "s/\[mysqld\]/\[mysqld\]\n\
max_allowed_packet=$max_allowed_packet/g" $my_cnf_file
# update listening port
sed -ie "s/\[mysqld\]/\[mysqld\]\n\
port=$db_port/g" $my_cnf_file

sed -i "s/port.*=[0-9]*/port=$db_port/g" $my_cnf_file

if [ "x$OS" != "x" ] && [ "$OS" = 'Ubuntu' ]; then
    # Make sure that MySQL is started
    service mysql restart
else
    # set up auto-start on booting
    chkconfig mysqld on
    # restart mysqld service
    service mysqld start
fi

# this will assign a password for mysql admin user 'root'
mysqladmin -u $db_root_username password $db_root_password

```

d Click **OK**.

12 Configure the Start action.

- a Select **Bash** from the Script **Type** drop-down menu.
- b Click **Click here to edit**.
- c Paste the following script.

```

#!/bin/sh

echo "The maximum allowed packet size is: "

```

d Place the cursor between the colon and the quote mark.

- e Select **max_allowed_packet_size** from the **Select a property to insert** drop-down menu.

The script now includes the property.

```
#!/bin/sh
```

```
echo "The maximum allowed packet size is: $max_allowed_packet_size"
```

- f Click **OK**.

- 13 Click **Next**.

- 14 Click **Finish**.

- 15 Select the row that contains MySQL for Linux Virtual Machines and click **Publish**.

Your MySQL Software component is available to other architects on the blueprint design page, but you can't make Software components available until you combine them with a machine.


What to do next

Using your software architect, application architect, or IaaS architect privileges, combine your MySQL component with the CentOS for Software machine blueprint.

Scenario: Create a Container for Your MySQL on CentOS Rainpole Blueprint

Using your IaaS, software, or application architect privileges, create a blueprint container and configure the name, description, and unique identifier for your MySQL on CentOS vSphere blueprint.

Procedure

- 1 Select **Design > Blueprints**.
- 2 Click the **New** icon ()
- 3 Enter **MySQL on CentOS** in the **Name** text box.
- 4 Review the generated unique identifier.

The identifier field automatically populates based on the name you entered. You can edit this field now, but after you save the blueprint you can never change it. Because identifiers are permanent and unique within your tenant, you can use them to programmatically interact with blueprints and to create property bindings.

- 5 Enter **MySQL Software on vSphere CentOS Machine** in the **Description** text box.
- 6 Configure a lease range for users to choose from by entering **1** in the **Minimum** text box and **7** in the **Maximum** text box.

Users can choose to lease their requested machines for up to 7 days before having to renew their leases or letting their machines be destroyed.

- 7 Click **OK**.

What to do next

Drag your MySQL component and your published CentOS for Software machine blueprint onto the canvas.

Scenario: Add Software and a Machine to the MySQL on CentOS Blueprint for Rainpole

Using your IaaS, software, or application architect privileges, drag the published CentOS for Software Testing machine blueprint onto your canvas to reuse that blueprint as your machine. You drag your published software component onto the virtual machine and configure the Software properties you specified in the Software component.

To successfully add software components to the design canvas, you must also have business group member, business group administrator, or tenant administrator role access to the target catalog.

Procedure


- 1 Click **Blueprints** in the Categories list.
- 2 Drag **CentOS for Software Testing** onto the design canvas.
- 3 Click **Software Components** in the Categories list.
- 4 Drag **MySQL for Linux Virtual Machines** to the vSphere machine.
- 5 Click the **Properties** tab.
- 6 Update the db_port property for this blueprint.
 - a Select the db_port property and click **Edit**.
 - b Enter **3308** in the **Value** text box.
 When a service catalog user requests the item, 3308 is the default value.
 - c Click **OK**.
- 7 Click **Finish**.
- 8 Select the row that contains CentOS with MySQL and click **Publish**.

You published a blueprint that includes the CentOS machine and MySQL software component.

Scenario: Add Your CentOS with MySQL Catalog Item to the Rainpole Service

Using your tenant administrator privileges, add your new blueprint to the Rainpole catalog service so you can verify your work.

Procedure

- 1 Select **Administration > Catalog Management > Services**.
- 2 Select the Rainpole catalog service row in the **Services** list and click **Manage Catalog Items**.
- 3 Click the **New** icon (.
- 4 Select **CentOS with MySQL**.
 Only published blueprints and components that are not yet associated with a service appear in the list. If you do not see the blueprint, verify that it was published or that it is not included in another service.
- 5 Click **OK**.
- 6 Click **Close**.

Your CentOS with MySQL catalog item is ready for you to request. You do not have to entitle the new catalog item because you entitled your Rainpole business group to the entire Rainpole service.

What to do next

Request the CentOS with MySQL catalog item to verify your work.

Scenario: Provision the CentOS with MySQL Catalog Item for Rainpole

Using the test user account, request the service catalog item to provision a CentOS machine with MySQL.

Procedure

- 1 Log out of the vRealize Automation console.
- 2 Log back in with the username **test_user** and password **VMware1!**.
- 3 Click the **Catalog** tab.
- 4 Click the **Request** button to request a catalog item.
- 5 Enter **verifying functionality** in the **Description** text box.
- 6 Click **Submit** to request the catalog item.
- 7 Click the **Requests** tab to monitor the status of your request.

When the machine is successfully provisioned, the status message **Successful** appears.

What to do next

- Plan for installing a production environment. See *Reference Architecture*.
- Learn about more options for configuring vRealize Automation, designing and exporting blueprints, and governing your service catalog. See *Configuring vRealize Automation*.

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