

# Installing and Configuring vRealize Code Stream

12 APRIL 2018

vRealize Code Stream 2.4



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# Contents

	About vRealize Code Stream Installation and Configuration	4
<b>1</b>	<b>vRealize Code Stream Installation</b>	<b>5</b>
	Preparing for Installation	6
	Installation Checklist for Using vRealize Code Stream	10
	Installation Worksheet	11
	Installing vRealize Code Stream With the Installation Wizard	11
	Installing vRealize Code Stream Through the Standard Interfaces	14
	Apply a vRealize Code Stream License to an Appliance	19
<b>2</b>	<b>Configuring Components</b>	<b>21</b>
	Managing Users	21
<b>3</b>	<b>Registering Components</b>	<b>25</b>
	Registering Plug-In Instances and Endpoints for a Release Pipeline	25
<b>4</b>	<b>Troubleshooting</b>	<b>36</b>
	Default Log Locations	36
	Create a Support Bundle for VMware vRealize Automation	36
	Plug-Ins Might Not Load	37
	vRealize Automation Services Might Not Start	37
	Blank Pages Might Appear When Using Internet Explorer 9 or 10 on Windows 7	38
	Troubleshooting the vRealize Automation Appliance	38
	Troubleshooting Log-In Errors	39

# About vRealize Code Stream Installation and Configuration

The *Installation and Configuration* guide provides information about how to install and configure vRealize Code Stream to automate the release of applications. In this guide, vRealize Automation appliance refers to the underlying appliance with the minimum set of common services required to use the vRealize Code Stream application and vRealize Automation refers to the complete set of capabilities offered by the vRealize Automation product. This guide provides installation tasks that you must perform for both vRealize Automation and vRealize Code Stream.

## Intended Audience

This information is intended for anyone who wants to install vRealize Code Stream, and configure the environment to automate the release applications in development environments. The information is written for experienced developers and operation teams who are familiar with release automation of applications to production environments.

## 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>.

# vRealize Code Stream Installation

1

vRealize Code Stream shares a platform and some common services with vRealize Automation and is delivered in the same virtual appliance.

By entering the appropriate license keys, a System Administrator can unlock either vRealize Automation, vRealize Code Stream, or both products on the same appliance.

## Installing vRealize Code Stream

To install vRealize Code Stream, you must:

- Deploy and configure a vRealize Automation appliance.
- Apply a vRealize Code Stream license.
- Configure a tenant to assign user roles in vRealize Code Stream.

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**Caution** Although you can enable vRealize Code Stream on the same virtual appliance as vRealize Automation in lab or evaluation environments, it is not a supported configuration for production systems. This requirement is important when vRealize Automation is configured in High Availability (HA) mode. This version of vRealize Code Stream does not support HA configuration. If you enable vRealize Code Stream on a vRealize Automation instance that runs in HA mode, doing so can put the overall system in an unpredictable state.

If you enabled vRealize Code Stream on a vRealize Automation instance in HA mode, and encountered problems, see the VMware knowledge base article at <https://kb.vmware.com/kb/2145084> to resolve those problems. If you have further questions, contact VMware Global Support Services.

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## Licensing vRealize Code Stream

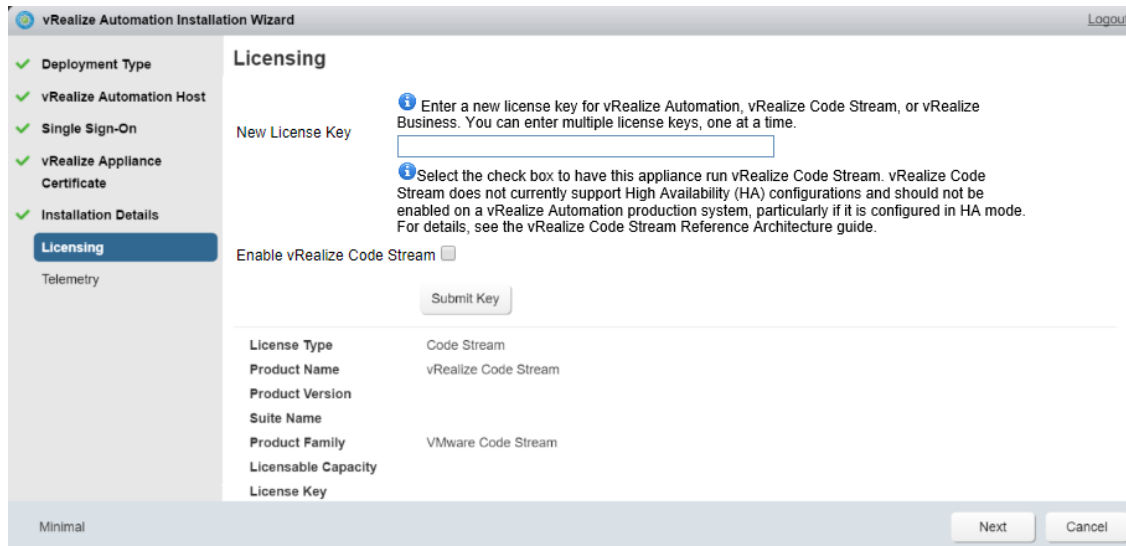
You can have the vRealize Automation appliance run vRealize Code Stream.

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**Caution** Before you enable vRealize Code Stream, verify that High Availability (HA) is not running on the vRealize Automation appliance.

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To enable vRealize Code Stream, in the vRealize Automation installation wizard, select the **Enable vRealize Code Stream** check box.



**Important** If you apply your license without enabling vRealize Code Stream, you can enable vRealize Code Stream later. Apply the license again, and select **Enable vRealize Code Stream**.

The selection to enable vRealize Code Stream also appears on the Licensing tab in the vRealize Automation appliance. See [Apply a vRealize Code Stream License to an Appliance](#).

This chapter includes the following topics:

- [Preparing for Installation](#)
- [Installation Checklist for Using vRealize Code Stream](#)
- [Installation Worksheet](#)
- [Installing vRealize Code Stream With the Installation Wizard](#)
- [Installing vRealize Code Stream Through the Standard Interfaces](#)
- [Apply a vRealize Code Stream License to an Appliance](#)

## Preparing for Installation

System Administrators install vRealize Code Stream into their existing virtualization environments. Before you begin an installation, prepare the deployment environment to meet system requirements.

## DNS and Host Name Resolution

vRealize Code Stream requires the system administrator to identify all hosts by using a fully qualified domain name (FQDN).

**Important** vRealize Code Stream does not allow navigation to hosts that contain the underscore ( \_ ) character in the host name.

## Hardware and Virtual Machine Requirements

The virtual appliances are pre-configured virtual machines that you add to your vCenter Server or ESXi inventory.

For operating system and high-level environment requirements, including information about supported browsers and operating systems, see the *vRealize Automation Support Matrix*.

An Active Directory is considered small when there are up to 25,000 users in the Organizational Unit (OU) to be synced in the ID Store configuration. An Active Directory is considered large when there are more than 25,000 users in the OU.

The hardware requirements for vRealize Code Stream for Small Active Directories are:

- 4 CPUs
- 18-GB memory
- 60-GB disk storage

## Password Considerations

Character restrictions apply to some passwords.

The vRealize Code Stream administrator password is subject to the following restrictions:

- Cannot contain a trailing "=" character. Such passwords are accepted when you assign them, but result in errors when you perform operations such as saving endpoints.
- Cannot contain non-ASCII or extended ASCII characters.
- Cannot contain a comma or have a space between characters.

## Port Requirements

vRealize Code Stream uses designated ports for communication and data access.

Although vRealize Code Stream uses only port 443 for communication, there might be other ports open on the system. Because open, unsecure ports can be sources of security vulnerabilities, review all open ports on your system and ensure that only the ports that are required by your business applications are open.

## vRealize Automation Appliance

The following ports are used by the vRealize Appliance.

**Table 1-1. Incoming Ports for the vRealize Appliance**

Port	Protocol	Comments
22	TCP	Optional. SSH.
80	TCP	Optional. Redirects to 443.
111	TCP, UDP	RPC

**Table 1-1. Incoming Ports for the vRealize Appliance (Continued)**

Port	Protocol	Comments
443	TCP	Access to the vRealize Automation console and API calls.
5480	TCP	Access to virtual appliance Web management interface
5480	TCP	Used by Management Agent
5488, 5489	TCP	Internal. Used by vRealize Appliance for updates.
4369, 25672,5671,5672	TCP	RabbitMQ messaging
8230, 8280, 8281	TCP	Internal vRealize Orchestrator instance
8444	TCP	Console proxy communication for vSphere VMware Remote Console connections

**Table 1-2. Outgoing Ports for the vRealize Automation Appliance**

Port	Protocol	Comments
25, 587	TCP, UDP	SMTP for sending outbound notification emails
53	TCP, UDP	DNS
67, 68, 546, 547	TCP, UDP	DHCP
80	TCP	Optional. For fetching software updates. Updates can be downloaded separately and applied.
110, 995	TCP, UDP	POP for receiving inbound notification emails
143, 993	TCP, UDP	IMAP for receiving inbound notification emails
123	TCP, UDP	Optional. For connecting directly to NTP instead of using host time.
902	TCP	ESXi network file copy operations and VMware Remote Console (VMRC) connections
5432	TCP, UDP	Optional. For communicating with an Appliance Database.
7444	TCP	Communication with SSO service over HTTPS
8281	TCP	Optional. For communicating with an external vRealize Orchestrator instance .

Other ports might be required by specific vRealize Orchestrator plug-ins that communicate with external systems. See the documentation for the vRealize Orchestrator plug-in.

## User Accounts and Credentials Required for Installation

You must verify that you have the roles and credentials to install vRealize Code Stream components.

### Virtual Appliance Installation

To deploy the vRealize Appliance, you must have the appropriate privileges on the deployment platform (for example, vSphere administrator credentials).

During the deployment process, you specify the password for the virtual appliance administrator account. This account provides access to the vRealize Appliance management console from which you configure and administer the virtual appliances.



## Security

vRealize Code Stream uses SSL to ensure secure communication among components. Passphrases are used for secure database storage.

### vRealize Code Stream Certificates

vRealize Code Stream uses SSL certificates for secure communication. You can obtain certificates from an internal or external certificate authority, or generate self-signed certificates during the deployment process for each component.

For important information about troubleshooting, supportability, and trust requirements for certificates, see the VMware knowledge base article at <http://kb.vmware.com/kb/2106583>.

You can update or replace certificates after deployment. For example, a certificate may expire or you may choose to use self-signed certificates during your initial deployment, but then obtain certificates from a trusted authority before going live with your vRealize Code Stream implementation. When you do a minimal deployment, you can generate a self-signed certificate during vRealize Code Stream Appliance configuration.

### Certificate Chains

If you use certificate chains, specify the certificates in the following order:

- Client-server certificate signed by the intermediate CA certificate
- One or more intermediate certificates
- A root CA certificate

Include the BEGIN CERTIFICATE header and END CERTIFICATE footer for each certificate when you import certificates.

### Extracting Certificates and Private Keys

Certificates that you use with the virtual appliances must be in the PEM file format.

The examples in the following table use Gnu `openssl` commands to extract the certificate information you need to configure the virtual appliances.

**Table 1-3. Sample Certificate Values and Commands (openssl)**

Certificate Authority Provides	Command	Virtual Appliance Entries
RSA Private Key	<code>openssl pkcs12 -in <i>path_to_.pfx</i> <i>certificate_file</i> -nocerts -out key.pem</code>	<b>RSA Private Key</b>
PEM File	<code>openssl pkcs12 -in <i>path_to_.pfx</i> <i>certificate_file</i> -clcerts -nokeys -out cert.pem</code>	<b>Certificate Chain</b>
(Optional) Pass Phrase	n/a	<b>Pass Phrase</b>

## Security Passphrase

vRealize Code Stream uses security passphrases for database security. A passphrase is a series of words used to create a phrase that generates the encryption key that protects data while at rest in the database.

Follow these guidelines when creating a security passphrase for the first time.

- Use the same passphrase across the entire installation to ensure that each component has the same encryption key.
- Use a phrase that is greater than eight characters long.
- Include uppercase, lowercase and numeric characters, and symbols.
- Memorize the passphrase or keep it in a safe place. The passphrase is required to restore database information in the event of a system failure or to add components after initial installation. Without the passphrase, you cannot restore successfully.

## Time Synchronization

Time synchronization is crucial for the secure communication across systems. A system administrator must set up accurate timekeeping as part of the vRealize Code Stream installation.

Installation fails if time synchronization is set up incorrectly.

Timekeeping must be consistent and synchronized across the vRealize Code Stream and remote vRealize Automation servers. By using the same timekeeping method for each component, you can ensure this consistency.

For virtual machines, you can use the following methods:

- Configuration by using Network Time Protocol (directly)
- Configuration by using Network Time Protocol through ESXi with VMware Tools. You must have NTP set up on the ESXi.

For timekeeping best practices for Windows servers, including NTP, see <https://kb.vmware.com/s/article/1318>.

## Installation Checklist for Using vRealize Code Stream

The installation checklist provides a high-level overview of the sequence of tasks you must perform to complete the vRealize Code Stream installation.

### Installation Checklist

Use the checklist to track your work as you complete the installation tasks in the order they are listed.

**Table 1-4. Installation Tasks**

	Task	Details
<input type="checkbox"/>	Complete the installation worksheet	<a href="#">Installation Worksheet</a>
<input type="checkbox"/>	Deploy the vRealize Automation appliance	<a href="#">Deploy the vRealize Automation Appliance</a>
<input type="checkbox"/>	Set up the vRealize Automation appliance	<a href="#">Configure the vRealize Appliance</a>
<input type="checkbox"/>	Add the vRealize Code Stream license key	<a href="#">Apply a vRealize Code Stream License to an Appliance</a>
<input type="checkbox"/>	Configure Tenant	See the vRealize Automation Information Center.
<input type="checkbox"/>	Add vRealize Code Stream roles	<a href="#">Assign Roles to Directory Users or Groups</a> Assign the Release Manager, Release Engineer, and Release Dashboard user roles for modeling and publishing a pipeline.

## Installation Worksheet

You can use this worksheet to record important information for your reference during the installation process.

The settings that you provide are case-sensitive.

**Table 1-5. vRealize Appliance Information**

Variable	Value	Example
Host Name (FQDN)		vracs-va.mycompany.com
IP		192.168.1.105
Username	administrator@vsphere.local (default)	administrator@vsphere.local
Password		vmware

## Installing vRealize Code Stream With the Installation Wizard

The Installation Wizard for vRealize Automation provides a simple and fast way to install minimal or enterprise deployments.

You must deploy a vRealize Appliance before you begin the wizard.

### Wizard Navigation

The Installation Wizard appears the first time you log in to your vRealize Appliance. If you want to stop the wizard and return later, log out with the **Logout** button that appears on each screen. Use the **Cancel** button to exit the wizard and install through the management console.

Use the **Previous** and **Next** buttons to navigate through wizard screens.

## Deploy the vRealize Automation Appliance

To deploy the vRealize Appliance, a system administrator must log in to the vSphere client and select deployment settings.

Some restrictions apply to the root password you create for the vRealize Automation administrator.

For more information, see [Password Considerations](#).

### Prerequisites

- Download the vRealize Automation appliance from the VMware Web site.
- Log in to the vSphere client as a user with system administrator privileges.

### Procedure

- 1 Select **File > Deploy OVF Template** from the vSphere client.
- 2 Browse to the vRealize Automation appliance file you downloaded and click **Open**.
- 3 Click **Next**.
- 4 Click **Next** on the OVF Template Details page.
- 5 Accept the license agreement and click **Next**.
- 6 Enter a unique virtual appliance name according to the IT naming convention of your organization in the **Name** text box, select the datacenter and location to which you want to deploy the virtual appliance, and click **Next**.
- 7 Follow the prompts until the Disk Format page appears.
- 8 Verify on the Disk Format page that enough space exists to deploy the virtual appliance and click **Next**.
- 9 Select the disk format. For example, Thin Provisioning.
- 10 Follow the prompts to the Properties page.

The options that appear depend on your vSphere configuration.

- 11 Configure the values on the Properties page.
  - a Enter the root password to use when you log in to the virtual appliance console in the **Enter password** and **Confirm password** text boxes.
  - b Select or uncheck the **SSH service** checkbox to choose whether SSH service is enabled for the appliance.

This value is used to set the initial status of the SSH service in the appliance. If you are installing with the Installation Wizard, enable this before you begin the wizard. You can change this setting from the appliance management console after installation.
  - c Enter the fully qualified domain name of the virtual machine in the **Hostname** text box.
  - d Configure the networking properties.

12 Click **Next**.

13 Depending on your vCenter and DNS configurations, it could take some time for the DNS to resolve. To expedite this process, perform the following steps.

- If **Power on after deployment** is available on the Ready to Complete page.
  - a Select **Power on after deployment** and click **Finish**.
  - b Click **Close** after the file finishes deploying into vCenter.
  - c Wait for the machine to start.  
This could take up to 5 minutes.
- If **Power on after deployment** is not available on the Ready to Complete page.
  - a Click **Close** after the file finishes deploying into vCenter.
  - b Power on the VM and wait for some time for the VM to start up.
  - c Verify that you can ping the DNS of the virtual machine. If you cannot ping the DNS, restart the virtual machine.
  - d Wait for the machine to start. This could take up to 5 minutes.

14 Open a command prompt and ping the FQDN to verify that the fully qualified domain name can be resolved against the IP address of vRealize Automation appliance.

## Run the Installation Wizard for a Minimal Deployment

Set up a single vRealize Appliance to install vRealize Code Stream.

The wizard is disabled when you click **Cancel**, or when you log out of the wizard and begin an installation through the management console.

### Procedure

- 1 Open a Web browser.
- 2 Navigate to the vRealize Automation management console by using its fully qualified domain name, `https://vracs-vahostname.domain.name:5480/`.
- 3 Log in with the user name **root** and the password you entered when you deployed the appliance.
- 4 When the Installation Wizard appears, click **Next**.
- 5 Accept the End-User License Agreement and click **Next**.
- 6 Select **Minimal Deployment** and unselect **Install Infrastructure as a Service** on the Deployment Type screen and click **Next**.
- 7 If needed, you can change the timekeeping method for your vRealize Automation appliance. If you make changes, click **Change Time Settings**.
- 8 To select the host, select **Resolve Automatically**.
- 9 Enter the administration password, confirm the password, and click **Next**.

- 10 Submit the vRealize Appliance Certificate information such as Organization, Organizational Unit, and Country code.
- 11 Click **Save Generated Certificate** and click **Next**.
- 12 Click **Install**.
- 13 Enter a valid vRealize Code Stream license key and click **Submit Key**.
- 14 To choose whether to join the VMware Customer Experience Improvement Program (CEIP), click the **Telemetry** tab.  
  
Details regarding the data collected through CEIP, and the purposes for which it is used by VMware, are given at the Trust & Assurance Center at <http://www.vmware.com/solutions/trustvmware/ceip.html>.
- 15 (Optional) Select **Join the VMware Customer Experience Improvement Program to participate in the program** and click **Next**.
- 16 Click **Next**, and click **Finish**
- 17 Confirm that you can log in to the vRealize Automation console.
  - a Open a Web browser.
  - b Navigate to *https://vracs-hostname.domain.name/vcac*.

## Installing vRealize Code Stream Through the Standard Interfaces

As an alternative to the Installation Wizard, you can install vRealize Code Stream through the vRealize Automation appliance management console.

Installation through the standard interface is intended primarily for minimal deployment.

### Minimal Deployment Checklist

A system administrator can deploy complete product in a minimal configuration. Minimal deployments are typically used in a development environment or as a proof of concept and require fewer steps to install.

The Minimal Deployment Checklist provides a high-level overview of the sequence of tasks you must perform to complete a minimal installation.

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

**Table 1-6. Minimal Deployment Checklist**

Task	Details
<input type="checkbox"/> Plan and prepare the installation environment and verify that all installation prerequisites are met.	<a href="#">Password Considerations</a>
<input type="checkbox"/> Set up your vRealize Appliance	<a href="#">Deploy and Configure the vRealize Automation Appliance</a>

## Deploy and Configure the vRealize Automation Appliance

The vRealize Appliance is a preconfigured virtual appliance that deploys the vRealize Appliance server and Web console (the user portal). It is delivered as an open virtualization format (OVF) template. The system administrator downloads the appliance and deploys it into the vCenter Server or ESX/ESXi inventory.

### Deploy the vRealize Automation Appliance

To deploy the vRealize Appliance, a system administrator must log in to the vSphere client and select deployment settings.

Some restrictions apply to the root password you create for the vRealize Automation administrator.

For more information, see [Password Considerations](#).

#### Prerequisites

- Download the vRealize Automation appliance from the VMware Web site.
- Log in to the vSphere client as a user with system administrator privileges.

#### Procedure

- 1 Select **File > Deploy OVF Template** from the vSphere client.
- 2 Browse to the vRealize Automation appliance file you downloaded and click **Open**.
- 3 Click **Next**.
- 4 Click **Next** on the OVF Template Details page.
- 5 Accept the license agreement and click **Next**.
- 6 Enter a unique virtual appliance name according to the IT naming convention of your organization in the **Name** text box, select the datacenter and location to which you want to deploy the virtual appliance, and click **Next**.
- 7 Follow the prompts until the Disk Format page appears.
- 8 Verify on the Disk Format page that enough space exists to deploy the virtual appliance and click **Next**.
- 9 Follow the prompts to the Properties page.

The options that appear depend on your vSphere configuration.

**10** Configure the values on the Properties page.

- a Enter the root password to use when you log in to the virtual appliance console in the **Enter password** and **Confirm password** text boxes.
- b Select or uncheck the **SSH service** checkbox to choose whether SSH service is enabled for the appliance.

This value is used to set the initial status of the SSH service in the appliance. If you are installing with the Installation Wizard, enable this before you begin the wizard. You can change this setting from the appliance management console after installation.

- c Enter the fully qualified domain name of the virtual machine in the **Hostname** text box.
- d Configure the networking properties.

**11** Click **Next**.

**12** Depending on your vCenter and DNS configurations, it could take some time for the DNS to resolve. To expedite this process, perform the following steps.

- If **Power on after deployment** is available on the Ready to Complete page.
  - a Select **Power on after deployment** and click **Finish**.
  - b Click **Close** after the file finishes deploying into vCenter.
  - c Wait for the machine to start.  
This could take up to 5 minutes.
- If **Power on after deployment** is not available on the Ready to Complete page.
  - a Click **Close** after the file finishes deploying into vCenter.
  - b Power on the VM and wait for some time for the VM to start up.
  - c Verify that you can ping the DNS of the virtual machine. If you cannot ping the DNS, restart the virtual machine.
  - d Wait for the machine to start. This could take up to 5 minutes.

**13** Open a command prompt and ping the FQDN to verify that the fully qualified domain name can be resolved against the IP address of vRealize Automation appliance.

## Enable Time Synchronization on the vRealize Automation Appliance

To ensure a successful installation, enable the time synchronization on the Clocks on the vRealize Automation Appliance.

If you see certificate warnings during this process, continue past them to finish the installation.

### Prerequisites

[Deploy the vRealize Automation Appliance](#)



**Procedure**

- 1 Navigate to the vRealize Automation management console by using its fully qualified domain name, `https://vracs-vahostname.domain.name:5480/`.
- 2 Log in with the user name **root** and the password you entered when you deployed the appliance.
- 3 Select **Admin > Time Settings**.
- 4 Select an option from the **Time Sync Mode** menu.

Option	Action
<b>Use Time Server</b>	Select <b>Use Time Server</b> from the <b>Time Sync Mode</b> menu to use Network Time Protocol . For each time server that you are using, enter the IP address or the host name in the <b>Time Server</b> text box.
<b>Use Host Time</b>	Select <b>Use Host Time</b> from the <b>Time Sync Mode</b> menu to use VMware Tools time synchronization. You must configure the connections to Network Time Protocol servers before you can use VMware Tools time synchronization.

- 5 Click **Save Settings**.
- 6 Click **Refresh**.
- 7 Verify that the value in **Current Time** is correct.  
You can change the time zone as required from the Time Zone Setting page on the **System** tab.
- 8 (Optional) Click **Time Zone** from the **System** tab and select a system time zone from the menu choices.  
The default is Etc/UTC.
- 9 Click **Save Settings**.

**Configure the vRealize Appliance**

To prepare the vRealize Appliance for use, a system administrator configures the host settings, generates an SSL certificate, and provides SSO connection information.

**Procedure**

- 1 Navigate to the vRealize Automation management console by using its fully qualified domain name, `https://vracs-vahostname.domain.name:5480/`.
- 2 Continue past the certificate warning.
- 3 Log in with user name **root** and the password you specified when you deployed vRealize Appliance.

#### 4 Select vRA Settings > Host Settings

Option	Action
<b>Resolve Automatically</b>	Select <b>Resolve Automatically</b> to specify the name of the current host for the vRealize Automation appliance.
<b>Update Host</b>	For new hosts, select <b>Update Host</b> . Enter the fully qualified domain name of the vRealize Automation appliance, <i>vracs-hostname.domain.name</i> , in the <b>Update Host</b> text box.

**Note** Configure SSO settings as described later in this procedure whenever you use **Update Host** to change a host name.

#### 5 Select the certificate type from the **Certificate Action** menu.

If you are using a PEM-encoded certificate, for example for a distributed environment, select **Import**.

Certificates that you import must be trusted and applicable to all instances of vRealize Appliance by using Subject Alternative Name (SAN) certificates.

**Note** If you use certificate chains, specify the certificates in the following order:

- a Client-server certificate signed by the intermediate CA certificate
- b One or more intermediate certificates
- c A root CA certificate

Option	Action
<b>Keep Existing</b>	Leave the current SSL configuration. To cancel your changes, select this option.
<b>Generate Certificate</b>	<ol style="list-style-type: none"> <li>a The value displayed in the <b>Common Name</b> text box is the Host Name as it appears on the upper part of the page. If additional instances of the vRealize Appliance available, their FQDNs are included in the SAN attribute of the certificate.</li> <li>b Enter your organization name, such as your company name, in the <b>Organization</b> text box.</li> <li>c Enter your organizational unit, such as your department name or location, in the <b>Organizational Unit</b> text box.</li> <li>d Enter a two-letter ISO 3166 country code, such as <b>US</b>, in the <b>Country</b> text box.</li> </ol>
<b>Import</b>	<ol style="list-style-type: none"> <li>a Copy the certificate values from BEGIN PRIVATE KEY to END PRIVATE KEY, including the header and footer, and paste them in the <b>RSA Private Key</b> text box.</li> <li>b Copy the certificate values from BEGIN CERTIFICATE to END CERTIFICATE, including the header and footer, and paste them in the <b>Certificate Chain</b> text box. For multiple certificate values, include a BEGIN CERTIFICATE header and END CERTIFICATE footer for each certificate.</li> </ol> <p><b>Note</b> For chained certificates, additional attributes might be available.</p> <ol style="list-style-type: none"> <li>c (Optional) If your certificate uses a pass phrase to encrypt the certificate key, copy the pass phrase and paste it in the <b>Passphrase</b> text box.</li> </ol>

- 6 Click **Save Generated Certificate** if you have selected the follow the **Generated Certificate** option.
- 7 Follow the on-screen prompts if you have selected the **Keep Existing** option.
- 8 Enter a new license key for vRealize Code Stream.
- 9 Click **Submit Key** and click **Next**.

- 10 Click the **Telemetry** tab to choose whether to join the VMware Customer Experience Improvement Program (CEIP).

Details regarding the data collected through CEIP, and the purposes for which it is used by VMware, are given at the Trust & Assurance Center at

<http://www.vmware.com/solutions/trustvmware/ceip.html>.

- 11 (Optional) Select **Join the VMware Customer Experience Improvement Program to participate in the program** and click **Next**.
- 12 Click **Next**, and click **Finish**.

## Apply a vRealize Code Stream License to an Appliance

When you apply the vRealize Code Stream standalone license to a vRealize Automation appliance, you enable the vRealize Code Stream capabilities.

You can use the vRealize Code Stream standalone license to enable pipeline modeling, pipeline execution, and the release dashboard.

You can have the vRealize Automation appliance run vRealize Code Stream by selecting the **Enable vRealize Code Stream** check box when you submit the license key.

The screenshot shows the VMware vRealize Appliance web interface. The top navigation bar includes 'vRA Settings', 'Services', 'System', 'Telemetry', 'Network', 'Update', and 'Admin'. The 'vRA Settings' dropdown is expanded to show 'Host Settings', 'SSO', 'Licensing' (selected), 'Database', 'Messaging', 'Cluster', 'Logs', 'IaaS Install', 'Migration', and 'Certificates'. Under 'Licensing', there are sub-items: 'Xenon', 'Orchestrator', 'SW Agents', and 'Patches'. The main content area is titled 'Manage Licenses' and contains the following elements:

- Information icon:** Enter a new license key for vRealize Automation, vRealize Code Stream, or vRealize Business. You can enter multiple license keys, one at a time.
- New License Key:** A text input field.
- Information icon:** Select the check box to have this appliance run vRealize Code Stream. vRealize Code Stream does not currently support High Availability (HA) configurations and should not be enabled on a vRealize Automation production system, particularly if it is configured in HA mode. For details, see the vRealize Code Stream Reference Architecture guide.
- Enable vRealize Code Stream:** A checkbox that is currently unchecked.
- Actions:** Two buttons: 'Submit Key' and 'Refresh'.

This selection also appears in the vRealize Code Stream Installation Wizard. See [Chapter 1 vRealize Code Stream Installation](#).

---

**Caution** Before you enable vRealize Code Stream, verify that High Availability (HA) is not running on the vRealize Automation appliance.

---

**Important** If you apply your license without enabling vRealize Code Stream, you can enable vRealize Code Stream later. Apply the license again, and select **Enable vRealize Code Stream**.

---

### Prerequisites

Verify that the vRealize Automation appliance is set up. See [Configure the vRealize Appliance](#).

### Procedure

- 1 Open the vRealize Automation Appliance management console with the fully qualified domain name, `https://vracs-va-hostname.domain.name:5480/`.
- 2 Log in as the root user.
- 3 Select **vRA Settings > Licensing**.
- 4 Enter a valid vRealize Code Stream license key and click **Submit Key**.
- 5 Select the **Enable vRealize Code Stream** check box.
- 6 Wait for 5 minutes for the services to start, and for the tenant administrator to log in and assign the Release Manager and Release Engineer roles to users.

When the services have started, in the Virtual Appliance Management Interface (VAMI) Services you can confirm that the release-management service is registered.

- 7 After the admin assigns the Release Manager and Release Engineer, confirm that you can log in to the vRealize Automation console and see the **Code Stream** tab.
  - a Open a Web browser.
  - b Navigate to `https://vracs-hostname.domain.name/vcac`.

# Configuring Components

You must configure components such as vRealize Automation tenants, and assign roles to the identity store before you can use vRealize Code Stream.

You create the default tenant when you install vRealize Automation, but you can create more tenants to represent business units in an enterprise or companies that subscribe to cloud services from a service provider. For more information about configuring tenants, see the *vRealize Automation Installation Guide*.

## Managing Users

Tenant administrators create and manage custom groups and grant and manage user access rights to the vRealize Automation console.

## Add Identity Store


vRealize Automation uses identity stores to authenticate users. Each tenant is associated with at least one identity store when it is created, but you can add new ones if necessary.

When you delete an identity store, it removes the roles assigned to users from this store and from custom groups. It also removes information about the services that are available to this user. Entries for entitlements and business groups are not affected.

### Prerequisites

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

### Procedure

- 1 Select **Administration > Directories Management > Directories**.
- 2 Click the **Add** icon (.
- 3 Enter a name in the **Name** text box.
- 4 Select the type of the identity store from the **Type** drop-down menu.
- 5 Enter the following Identify Store configuration options.

Option	Action
URL	Enter the URL for the identity store. For example, <code>ldap://10.123.45.678:901</code> .
Domain	Enter the domain for the identity store.

Option	Action
(Optional) Domain Alias	Enter the domain alias.
Login User DN	Enter the login user Distinguished Name. For example, <b>cn=demoadmin,ou=demo,dc=dev,dc=mycompany,dc=com.</b>
Password	Enter the password for the identity store login user.
Group Search Base DN	Enter the group search base Distinguished Name. For example, <b>ou=demo,dc=dev,dc=mycompany,dc=com.</b>
User Search Base DN	Enter the user search base Distinguished Name.

6 Click **Test Connection**.

7 Click **Add**.

#### What to do next

[Assign Roles to Directory Users or Groups.](#)

## Assign Roles to Directory Users or Groups

Tenant administrators grant access rights to users by assigning roles to users or groups.

To allow users or groups to modify and trigger a pipeline, you must assign permissions to those users and groups. When you assign users and groups the role of Release Manager, they can modify and trigger the pipeline. When you assign users and groups the role of Release Engineer, they can trigger the pipeline. For more information, see the *Using vRealize Code Stream* guide.

#### Prerequisites

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

#### Procedure

1 Select **Administration > Users & Groups > Directory Users & Groups**.

2 Enter a user or group name in the **Search** box and press Enter.

Do not use an at sign (@), backslash (\), or slash (/) in a name. You can optimize your search by typing the entire user or group name in the form user@domain.

3 Click the name of the user or group to which you want to assign roles.

4 Select one or more roles from the Add Roles to this User list.

The Authorities Granted by Selected Roles list indicates the specific authorities you are granting.

5 (Optional) Click **Next** to view more information about the user or group.

6 On the **User Details** page, on the **General** tab, scroll the list of roles to add the user.

a To give the user permissions to modify and trigger a pipeline, select the **Release Manager** check box.

b To give the user permissions to trigger a pipeline, select the **Release Engineer** check box.

7 Click **Update**.

Users who are currently logged in to the vRealize Automation must log out and log back in to the vRealize Automation before they can navigate to the pages to which they have been granted access.

### What to do next

Optionally, you can create your own custom groups from users and groups in your Active Directory connections. See [Create a Custom Group](#).

## Create a Custom Group

Tenant administrators can create custom groups by combining other custom groups, identity store groups, and individual identity store users. Custom groups provide more granular control over access within vRealize Automation than business groups which correspond to a line of business, department, or other organizational unit.

Custom groups enable you to grant access rights for tasks on a finer basis than the standard vRealize Automation group assignments. For instance, you may want to create a custom group to allow tenant administrators to control who has specific permissions within the tenant.

You can assign roles to your custom group, but it is not necessary in all cases. For example, you can create a custom group called Machine Specification Approvers, to use for all machine pre-approvals. You can also create custom groups to map to your business groups so that you can manage all groups in one place. In those cases, you do not need to assign roles.

### Prerequisites

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

### Procedure

1 Select **Administration > Users & Groups > Custom Groups**.

2 Click the **Add** icon (+).

3 Enter a group name in the **New Group Name** text box.

Custom group names cannot contain the combination of a semicolon (;) followed by an equal sign (=).

4 (Optional) Enter a description in the **New Group Description** text box.

5 Select one or more roles from the Add Roles to this Group list.

The Authorities Granted by Selected Roles list indicates the specific authorities you are granting.

6 Click **Next**.

7 Add users and groups to create your custom group.

a Enter a user or group name in the **Search** box and press Enter.

Do not use an at sign (@), backslash (\), or slash (/) in a name. You can optimize your search by typing the entire user or group name in the form user@domain.

b Select the user or group to add to your custom group.

8 Click **Add**.

Users who are currently logged in to the vRealize Automation must log out and log back in to the vRealize Automation before they can navigate to the pages to which they have been granted access.

## Manage User and Group Entitlements

You can use user and group directory name search parameters to control user and group entitlements.

For users or groups from other domains to have the expected system privileges, they must appear on the following pages:

- **Administration > Users**
- **Administration > Groups**

If the users or groups do not have the expected privileges, review the search base distinguished name parameters on the Identity Store Configuration page. Ensure that the distinguished name search parameters are not so restrictive that the users and groups are excluded from the desired domains.

### Prerequisites

Log in to vRealize Automation as a tenant administrator.

### Procedure

- 1 Select **Administration > Identity Stores**.
- 2 Select the appropriate identity store and then click the **Edit** button.
- 3 Edit the group base distinguished name search parameters in the **Group search base DN** text box.  
If users or groups do not possess adequate privileges, edit the search parameters to be less restrictive.
- 4 Edit the user base distinguished name search parameters in the **User search base DN** text box.  
If users or groups do not possess adequate privileges, edit the search parameters to be less restrictive.
- 5 Click **Test Connection**.
- 6 Click **Update**.



## Registering Components

You must register various components, such as plug-ins and endpoints, before you can model and run release pipelines in vRealize Code Stream.

### Registering Plug-In Instances and Endpoints for a Release Pipeline

To connect and interact vRealize Code Stream with external systems, you must install a plug-in. Each plug-in that you install requires that you configure the endpoint and enter specific endpoint definitions. For example, to provision a virtual machine, vRealize Code Stream requires a vRealize Automation endpoint to facilitate the communication.

After you define and configure the plug-in endpoint, you can create a corresponding task in the release pipeline. In the task, you define parameters. Then, when you execute a pipeline, you can access the custom workflow in the vRealize Orchestrator client.

For example, a vRealize Automation endpoint allows for a provisioning task to be configured. A Jenkins endpoint allows for a task to configure the Jenkins job as part of the pipeline template.

vRealize Code Stream supports the following endpoint types.

**Table 3-1. Endpoint Types**

Endpoint Type	Details
Artifactory	<a href="#">Register an Artifactory Server Endpoint</a>
Jenkins	<a href="#">Register a Jenkins Server Endpoint</a>
vRealize Automation Server	<a href="#">Register a vRealize Automation Server Endpoint</a>
vRealize Orchestrator Workflow for Task	<a href="#">Register a vRealize Orchestrator Workflow for a Task</a>
vRealize Orchestrator Server	<a href="#">Register a vRealize Orchestrator Server Endpoint</a>
vRealize Orchestrator Workflow for Gating Rule	<a href="#">Register a vRealize Orchestrator Workflow for a Gating Rule</a>
Team Foundation Server	<a href="#">Register a Microsoft Team Foundation Server Endpoint</a>
Cloud Foundry Server	<a href="#">Register a Cloud Foundry Server Endpoint</a>
Bamboo Server	<a href="#">Register a Bamboo Server Endpoint</a>
Bugzilla Server	<a href="#">Register a Bugzilla Server Endpoint</a>
JIRA Server	<a href="#">Register a JIRA Server Endpoint</a>

## Register an Artifactory Server Endpoint

To use an Artifactory server in a release pipeline, you must register and configure an Artifactory server endpoint.

Artifact management persists the search criteria to find any artifacts from the Artifactory server. It allows you to search the physical location and identity of artifacts, and supplies the required artifact during the pipeline execution. With artifact management, you can specify an artifact by name and search type from the server, but not by location or unique identifier.

### Prerequisites

- Verify that the Artifactory server is available and configured. See the *Artifactory User Guide* on the jFrog website.
- Verify that the Artifactory server version is 4.3.0 or later.

### Procedure

- 1 Select **Code Stream > Endpoints**.
- 2 Click **Add**, and from the Endpoint Type drop-down menu select **Artifactory**.
- 3 Enter an Artifactory server endpoint name and an applicable description.  
For example, in the description section you can add the release pipeline name that uses this Artifactory server endpoint.
- 4 Enter the Artifactory server configuration details, and click **Save**.

The release pipeline can access the Artifactory server through the endpoint you created.

### What to do next

To use this endpoint in the release pipeline, you must create a test task.

See *Using vRealize Code Stream* in the vRealize Code Stream Information Center.

## Register a Jenkins Server Endpoint

You can run tests or other jobs by using the Jenkins plug-in that allows you to use custom automation and scripts.

You can use any Jenkins job in the Jenkins server in the release pipeline with this endpoint enabled. You can use this endpoint to invoke a Jenkins build job during the modeling of a release pipeline and run the job as part of the release pipeline.

### Prerequisites

- Verify that the Jenkins server is available and configured.
- Verify that the Jenkins server version is 1.561 or later.

- Verify that the Jenkins jobs are created in the Jenkins server with the input string parameter, `vRCSTestExecutionId`.

### Procedure

- 1 Select **Code Stream > Endpoints**.
- 2 Click **Add**.
- 3 Select **Jenkins** from the **Endpoint Type** drop-down menu.
- 4 Enter a Jenkins server endpoint name and an applicable description.

For example, in the description section you can add the release pipeline name that uses this Jenkins server endpoint.

- 5 Enter the Jenkins server configuration details.

Option	Description
<b>User Credentials</b>	User name and password for the Jenkins server.
<b>Folder Path</b>	<p>Enter the path of the folder used to group your jobs. Jenkins can run all jobs in the folder.</p> <ul style="list-style-type: none"> <li>▪ You can create a folder under another folder. For example, Folder1 can include job1.</li> <li>▪ Under Folder1, you can have another folder named Folder2, which includes job2.</li> </ul> <p>When you create an endpoint for Folder1, the folder path will be <code>job/Folder1</code>. The endpoint will only list job1.</p> <p>To obtain the list of jobs in the child folder named Folder2, you must create another endpoint with the folder path as <code>/job/Folder1/job/Folder2/</code>.</p>
<b>URL</b>	Enter the host URL as <i>protocol://host:port</i> . For example: <code>http://192.10.121.13:8080</code>
<b>Polling Interval</b>	The interval duration for vRealize Code Stream to poll the Jenkins server for updates.
<b>Request Retry Count</b>	Number of times to retry the scheduled build request for the Jenkins server.
<b>Retry Wait Time</b>	Seconds to wait before retrying the build request for the Jenkins server.

- 6 When the endpoint is created, you can select **Offline Creation** to require a validation and certificate acceptance.

The offline creation allows you to create the endpoint when the server is not accessible. You can accept the default setting, or select **Yes** to enable this configuration.

- 7 Click **Save**.

### What to do next

To use this endpoint in the release pipeline, you must create a test task. See the *Using vRealize Code Stream* guide.

## Register a vRealize Automation Server Endpoint

When you register a vRealize Automation, vRealize Code Stream invokes the vRealize Automation instance to provision infrastructure in a specific environment

vRealize Code Stream can also invoke multiple vRealize Automation instances.

You must register a vRealize Automation server endpoint to provision a machine blueprint on vRealize Automation.

### Prerequisites

- Log in to the vRealize Automation console as a **release manager**.

### Procedure

- 1 Select **Code Stream > Endpoints**.
- 2 Click **Add**.
- 3 Select the **vRealize Automation** version from the **Endpoint Type** drop-down menu.
- 4 Enter a vRealize Automation endpoint name and an applicable description.
- 5 When the endpoint is created, you can select **Offline Creation** to require a validation and certificate acceptance.

The offline creation allows you to create the endpoint when the server is not accessible. You can accept the default setting, or select **Yes** to enable this configuration.

- 6 Click **Save**.

### What to do next

To use this endpoint in the release pipeline, you must create a provision task. See the *Using vRealize Code Stream* guide.

## Register a vRealize Orchestrator Workflow for a Task

A release pipeline can configure a task to run a workflow that you create in the vRealize Orchestrator service. The task can use either an embedded or an external instance of the vRealize Orchestrator service.

You can use the embedded instance of the vRealize Orchestrator service, which is the instance that is already running on the same appliance. When you use the embedded instance, an endpoint is not needed.

You can also use an external instance of vRealize Orchestrator. When you use an external instance, you must define an endpoint. You must also tag the workflow, and use the correct data types.

Whether you use an embedded or external instance of the vRealize Orchestrator service, you must register the workflow, and use the correct data types.

- To register the vRealize Orchestrator service with vRealize Code Stream, you must tag the workflow with the keyword named `vRCS_CUSTOM`. Untagged workflows do not appear in vRealize Code Stream.
- Use only the string data type for the input and output properties. vRealize Code Stream cannot run workflows that use complex data types, or any other data type.

### Prerequisites

Verify that a workflow is created in vRealize Orchestrator.

### Procedure

- 1 Log in to the vRealize Orchestrator client to create a workflow.
- 2 Select **Library > Tagging > Tag workflow**.  
The Tag workflow is required for workflows. By default, the Manual Task workflow is provided.
- 3 Right-click **Tag workflow** and select **Start Workflow**.
- 4 To select the workflow, click the **Tagged Workflow** text box.  
For example, the tagged workflow can be Deploy Spring Travel.
- 5 For the tag, enter `vRCS_CUSTOM`.
- 6 For the value, enter `vRCS_CUSTOM`.
- 7 For the Global tag, click **Yes**, and click **Submit**.
- 8 In vRealize Automation, click the **Code Stream** tab to continue with the task configuration.

## Register a vRealize Orchestrator Server Endpoint

You can trigger workflows on an external vRealize Orchestrator from within a release pipeline.

### Procedure

- 1 Select **Code Stream > Endpoints**.
- 2 Click **Add**.
- 3 Select **vRealize Orchestrator External** from the **Endpoint Type** drop-down menu.
- 4 Enter a vRealize Orchestrator server endpoint name and an applicable description.  
For example, in the description section you can add the release pipeline name that uses this vRealize Orchestrator server endpoint.

## 5 Enter the vRealize Orchestrator server configuration details.

Option	Description
URL	Enter the host URL as <i>protocol://host:port</i> . For example: http://192.10.121.13:8080
User Credentials	To connect to the vRealize Orchestrator server, enter the user name and password.
Tenant	Enter the tenant group name.

## 6 When the endpoint is created, you can select **Offline Creation** to require a validation and certificate acceptance.

The offline creation allows you to create the endpoint when the server is not accessible. You can accept the default setting, or select **Yes** to enable this configuration.

## 7 Click **Save**.

### What to do next

To use this endpoint in the release pipeline, you must create a task. For more information, see the *Using vRealize Code Stream* guide.

## Register a vRealize Orchestrator Workflow for a Gating Rule

A gating rule can invoke a custom workflow in the vRealize Orchestrator service.

Only an embedded instance of the vRealize Orchestrator service can be used for a gating workflow. Use of an external instance is not supported.

You must register the gating workflow, and use the correct data types.

- To register the gating workflow with vRealize Code Stream, you must tag the gating workflow with the keyword named `VRCS_GATING_RULE`. Untagged workflows do not appear in vRealize Code Stream.
- Use only the string data type for the input and output properties. vRealize Code Stream cannot configure or run workflows that use complex data types, or any other data type.

### Prerequisites

Verify that the workflow for a gating workflow is created.

### Procedure

- 1 Log in to the vRealize Orchestrator client to create a gating workflow.
- 2 Select **Library > Tagging > Tag workflow**.
- 3 Right-click **Tag workflow** and select **Start Workflow**.
- 4 To select the gating workflow, click the **Tagged Workflow** text box.
- 5 For the tag, enter `VRCS_GATING_RULE`.
- 6 For the value, enter `VRCS_GATING_RULE`.

- 7 For the Global tag, click **Yes**, and click **Submit**.
- 8 In vRealize Automation, click the **Code Stream** tab to continue with the task configuration.

## Register a Microsoft Team Foundation Server Endpoint

You can connect to the Team Foundation Server to manage your build projects.

### Prerequisites

Verify that you have installed and configured Visual Studio Team Foundation Server 2013 or 2015.

### Procedure

- 1 Select **Code Stream > Endpoints**.
- 2 Click **Add**.
- 3 Select **Team Foundation Server** from the **Endpoint Type** drop-down menu.
- 4 Enter a Team Foundation Server endpoint name and an applicable description.
- 5 Enter the Team Foundation Server configuration details.

Option	Description
<b>Team Foundation Server Instance Name</b>	Enter the Team Foundation Server instance name. For example: qe-tfs-test
<b>User Credentials</b>	User name and password for the Team Foundation Server.
<b>Domain Name</b>	Domain name for the Team Foundation Server. If the Team Foundation Server is not in a domain, you can use the Windows server host name.
<b>URL</b>	Enter the host URL as <i>protocol://host:port/tfs</i> . For example: http://192.10.121.12:8080/tfs or https://192.10.121.12:8080/tfs
<b>Polling Interval</b>	Frequency of polling by the external system to determine the progress update or status.
<b>TFS Server Version</b>	Select the TFS Server version as 2013 or 2015. You can accept the default setting or select <b>Yes</b> to enable this configuration. The offline creation allows you to create the endpoint when the server is not accessible.

- 6 When the endpoint is created, you can select **Offline Creation** to require a validation and certificate acceptance.

The offline creation allows you to create the endpoint when the server is not accessible. You can accept the default setting, or select **Yes** to enable this configuration.

- 7 Click **Save**.

### What to do next

To use this endpoint in the release pipeline, you must create a provision task. See the *Using vRealize Code Stream* guide.

## Register a Cloud Foundry Server Endpoint

You can register a Cloud Foundry server as an endpoint to deploy and manage life cycle of a cloud application.

### Prerequisites

You can enable operations and manage pipelines during an application delivery.

- Verify that the Cloud Foundry server version is 255 or later.

### Procedure

- 1 Select **Code Stream > Endpoints**.
- 2 Click **Add**.
- 3 Select **Cloud Foundry** from the **Endpoint Type** drop-down menu.
- 4 Enter a Cloud Foundry server endpoint name and an applicable description.  
For example, in the description section you can add the release pipeline name that uses this Cloud Foundry server endpoint.
- 5 Enter the Cloud Foundry server configuration details.

Option	Description
URL	Enter the API endpoint URL <i>https://tapi.example.com</i> .
User Credentials	User name and password for the Cloud Foundry server.
Polling Interval	Frequency of polling by the external system to determine the progress update or status.

- 6 When the endpoint is created, you can select **Offline Creation** to require a validation and certificate acceptance.  
The offline creation allows you to create the endpoint when the server is not accessible. You can accept the default setting, or select **Yes** to enable this configuration.
- 7 Click **Save**.

### What to do next

To use this endpoint in the release pipeline, you must create a test task. See the *Using vRealize Code Stream* guide.

## Register a Bamboo Server Endpoint

You can run tests or other plans by using the Bamboo plug-in that allows you to use custom automation and scripts. You can use the endpoint to invoke a Bamboo build plan during the modeling of a release pipeline and execute the plan as part of the release pipeline.

You can use any Bamboo plan in the Bamboo server in the release pipeline with the endpoint enabled.



**Prerequisites**

- Verify that the Bamboo server version is 5.9.7 or later.

**Procedure**

- 1 Select **Code Stream > Endpoints**.
- 2 Click **Add**.
- 3 Select **Bamboo** from the **Endpoint Type** drop-down menu.
- 4 Enter a Bamboo server endpoint name and an applicable description.

For example, in the description section you can add the release pipeline name that uses this Bamboo server endpoint.

- 5 Enter the Bamboo server configuration details.

Option	Description
<b>URL</b>	Enter the host URL as <i>protocol://host:port</i> . For example: http://10.112.68.76:8085
<b>User Credentials</b>	User name and password for the Bamboo server.
<b>Request Retry Count</b>	Number of times to retry the scheduled build request for the Bamboo server.
<b>Polling Interval</b>	Frequency of polling by the external system to determine the progress update or status.
<b>Retry Wait Time</b>	Seconds to wait before retrying the build request for the Bamboo server.

- 6 When the endpoint is created, you can select **Offline Creation** to require a validation and certificate acceptance.

The offline creation allows you to create the endpoint when the server is not accessible. You can accept the default setting, or select **Yes** to enable this configuration.

- 7 Click **Save**.

**What to do next**

To use this endpoint in the release pipeline, you must create a test task. See the *Using vRealize Code Stream* guide.

**Register a Bugzilla Server Endpoint**

You can register a Bugzilla server endpoint to generate and update Bugzilla tasks or bugs from a release pipeline.

You can create a Bugzilla task or bug using a pipeline task. You update the assignee, change the status of the issue, and add comments to the issue.

**Prerequisites**

- Verify that the Bugzilla server version is 5.x or later.

**Procedure**

- 1 Select **Code Stream > Endpoints**.
- 2 Click **Add**.
- 3 Select **Bugzilla** from the **Endpoint Type** drop-down menu.
- 4 Enter a Bugzilla server endpoint name and an applicable description.

For example, in the description section you can add the release pipeline name that uses this Bugzilla server endpoint.

- 5 Enter the Bugzilla server configuration details.

Option	Description
URL	Enter the host URL as <i>protocol://host:port</i> . For example: http://192.10.121.13:8080
User Credentials	User name and password for the Bugzilla server.

- 6 When the endpoint is created, you can select **Offline Creation** to require a validation and certificate acceptance.

The offline creation allows you to create the endpoint when the server is not accessible. You can accept the default setting, or select **Yes** to enable this configuration.

- 7 Click **Save**.

**What to do next**

To use this endpoint in the release pipeline, you must create a test task. For more information, see the *Using vRealize Code Stream* guide.

**Register a JIRA Server Endpoint**

You can register a JIRA server endpoint to generate and update JIRA tasks or issues from a release pipeline.

You can create a JIRA task or issue using a pipeline task. You update the assignee, change the status of the issue, and add comments to the issue.

**Prerequisites**

- Verify that the JIRA server version is 6.3 or later.

**Procedure**

- 1 Select **Code Stream > Endpoints**.
- 2 Click **Add**.
- 3 Select **JIRA** from the **Endpoint Type** drop-down menu.

- 4 Enter a JIRA server endpoint name and an applicable description.

For example, in the description section you can add the release pipeline name that uses this JIRA server endpoint.

- 5 Enter the JIRA server configuration details.

Option	Description
JIRA Endpoint URL	Enter the host URL as <i>protocol://host:port</i> .
User Credentials	User name and password for the JIRA server.

- 6 When the endpoint is created, you can select **Offline Creation** to require a validation and certificate acceptance.

The offline creation allows you to create the endpoint when the server is not accessible. You can accept the default setting, or select **Yes** to enable this configuration.

- 7 Click **Save**.

#### What to do next

To use this endpoint in the release pipeline, you must create a test task. See the *Using vRealize Code Stream* guide.

# Troubleshooting

vRealize Code Stream troubleshooting provides procedures to resolve issues that you might encounter when you install or configure vRealize Automation.

This chapter includes the following topics:

- [Default Log Locations](#)
- [Create a Support Bundle for VMware vRealize Automation](#)
- [Plug-Ins Might Not Load](#)
- [vRealize Automation Services Might Not Start](#)
- [Blank Pages Might Appear When Using Internet Explorer 9 or 10 on Windows 7](#)
- [Troubleshooting the vRealize Automation Appliance](#)
- [Troubleshooting Log-In Errors](#)

## Default Log Locations

For information about a failed installation, consult the system and product log files.

The VMware vRealize Automation (vRA) content pack for vRealize Log Insight provides a consolidated summary of log events in all the vRealize Automation components. For more information, see the vRA 6.1+ Log Insight Content Pack description on VMware Solution Exchange at [https://solutionexchange.vmware.com/store/products/vra-6-1-log-insight-content-pack#.VU0r3\\_PD-Ht](https://solutionexchange.vmware.com/store/products/vra-6-1-log-insight-content-pack#.VU0r3_PD-Ht)

## vRealize Automation Framework Logs

Log entries for vRealize Automation Frameworks are located in the following location.

Log	Default location
Framework Logs	/var/log/vmware

## Create a Support Bundle for VMware vRealize Automation

A root user can create a support bundle in the vRealize Appliance management console. These bundles can help VMware support staff to identify causes of issues you might encounter.

Use the following procedure to create a support bundle for vRealize Appliance.

### Procedure

- 1 Navigate to the vRealize Appliance management console by using its fully qualified domain name, `https://vracs-va-hostname.domain.name:5480/`.
- 2 Log in and go to **Admin > Logs**.
- 3 Click **Create support bundle**.
- 4 Click **Download** and save the file on your system.

You can use the support bundle to troubleshoot issues on your own or to send to your VMware support representative.

## Plug-Ins Might Not Load

vRealize Code Stream might not load a plug-in.

### Problem

When vRealize Code Stream attempts to load a plug-in, the endpoint for the plug-in does not appear in the drop-down menu, and displays an error message.

### Cause

The plug-in might fail to load when you install and configure the current version of vRealize Code Stream.

### Solution

- 1 Establish an SSH connection to the virtual appliance.  
For example: `ssh root@VRCS_APPLIANCE`
- 2 Check the status of the service with the following command:  
`service tekton-server status`
- 3 If the status appears as stopped, run the service with the following command:  
`service tekton-server restart`  
If the endpoint still does not appear, contact Customer Support.

## vRealize Automation Services Might Not Start

If the vRealize Automation services fail to start, vRealize Code Stream might not start.

### Problem

When you attempt to start vRealize Code Stream, it might fail to start. As a result, if the vRealize Automation services are not started, an error message appears.

### Cause

The service for vRealize Code Stream is named `release-management-service` in the CAFÉ appliance that deploys the services for provisioning in vRealize Automation. After you install and configure the current version of vRealize Code Stream, the services might not start. This problem might occur for various reasons. As a result, a single solution cannot be provided. If the problem persists, contact Customer Support.

## Blank Pages Might Appear When Using Internet Explorer 9 or 10 on Windows 7

When you use Internet Explorer 9 or 10 on Windows 7, and compatibility mode is enabled, some pages appear to have no content.

### Problem

When using Internet Explorer 9 or 10 on Windows 7, the following pages have no content:

- Default Tenant Folder on the Orchestrator page
- Server Configuration on the Orchestrator page

### Cause

The problem might be related to compatibility mode being enabled. You can disable compatibility mode for Internet Explorer with the following steps.

### Solution

#### Prerequisites

Ensure that the menu bar is displayed. If you are using Internet Explorer 9 or 10, press **Alt** to display the Menu bar. Or, right-click the Address bar and select **Menu bar**.

#### Procedure

- 1 Select **Tools > Compatibility View settings**.
- 2 Deselect **Display intranet sites in Compatibility View**.
- 3 Click **Close**.

## Troubleshooting the vRealize Automation Appliance

The troubleshooting topics for vRealize Automation appliances provide solutions to potential installation-related problems that you might encounter when using your vRealize Automation appliances.

### Encryption.key File has Incorrect Permissions

A system error can result when incorrect permissions are assigned to the `Encryption.key` file for a virtual appliance.

**Problem**

You log in to vRealize Appliance and the Tenants page is displayed. After the page has begun loading, you see the message System Error.

**Cause**

The Encryption.key file has incorrect permissions or the group or owner user level is incorrectly assigned.

**Solution****Prerequisites**

Log in to the virtual appliance that displays the error.

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**Note** If your virtual appliances are running under a load balancer, you must check each virtual appliance.

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**Procedure**

- 1 View the log file `/var/log/vcac/catalina.out` and search for the message `Cannot write to /etc/vcac/Encryption.key`.
- 2 Go to the `/etc/vcac/` directory and check the permissions and ownership for the `Encryption.key` file. You should see a line similar to the following one:

```
-rw----- 1 vcac vcac 48 Dec 4 06:48 encryption.key
```

Read and write permission is required and the owner and group for the file must be `vcac`.

- 3 If the output you see is different, change the permissions or ownership of the file as needed.

**What to do next**

Log in to the Tenant page to verify that you can log in without error.

## Troubleshooting Log-In Errors

The troubleshooting topics for log-in errors for vRealize Automation provide solutions to potential installation-related problems that you might encounter when using vRealize Automation.

### Cannot Log In to a Tenant or Tenant Identity Stores Disappear

Ninety days after deployment, you cannot log into a tenant or the identity store for a tenant disappears.

**Problem**

- When you log in to a tenant, you see a blank page displayed with a Submit button in the upper left corner.
- You receive a System Exception error when accessing the tenant ID store configuration page.
- The ID store configuration disappears.

- You cannot log in to a tenant by using an LDAP account.
- The catalina.out log located in /var/log/vmware/vcac/ shows an error similar to the following:

```
12:40:49,190 [tomcat-http--34] [authentication] INFO
com.vmware.vim.sso.client.impl.SecurityTokenServiceImpl
$RequestResponseProcessor.handleFaultCondition:922 - Failed trying to retrieve
token: ns0:RequestFailed: Error occurred looking for solution user ::
Insufficient access YYYY-03-18 12:40:49,201 [tomcat-http--34] [authentication]
ERROR
com.vmware.vcac.platform.service.rest.resolver.ApplicationExceptionHandler.handle
UnexpectedException:820 - Failed trying to retrieve token: ns0:RequestFailed:
Error occurred looking for solution user :: Insufficient access
com.vmware.vim.sso.client.exception.InternalError: Failed trying to retrieve
token: ns0:RequestFailed: Error occurred looking for solution user ::
Insufficient access
```

### Cause

The SSO internal tenant administrator password expires after 90 days by default. This issue is internal to vRealize Automation and does not affect external, Active Directory identity stores.

It is a known issue that the vRealize Automation user interface does not provide notification that the tenant administrator password is expiring. The workaround for this issue is to disable the password expiration for the tenant administrator account.

For step-by-step instructions to resolve this issue, see the VMware knowledge base article at <http://kb.vmware.com/kb/2075011>.