Red Hat Satellite 6.14

Converting Hosts to RHEL by Using Satellite Conversions Toolkit

Deploy the Satellite conversions toolkit and convert CentOS Linux 7 systems to supportable RHEL systems

Red Hat Satellite 6.14 Converting Hosts to RHEL by Using Satellite Conversions Toolkit

Deploy the Satellite conversions toolkit and convert CentOS Linux 7 systems to supportable RHEL systems

Red Hat Satellite Documentation Team
satellite-doc-list@redhat.com

Legal Notice

Abstract

This guide describes how to prepare the Satellite conversions toolkit on a virtual machine on a public cloud, private cloud, or bare metal, and how to use the conversions toolkit to convert CentOS Linux 7 to Red Hat Enterprise Linux on your systems.

Table of Contents

PROVIDING FEEDBACK ON RED HAT DOCUMENTATION

We appreciate your feedback on our documentation. Let us know how we can improve it.

Use the **Create Issue** form in Red Hat Jira to provide your feedback. The Jira issue is created in the Red Hat Satellite Jira project, where you can track its progress.

Prerequisites

- Ensure you have registered a Red Hat account.

Procedure

1. Click the following link: Create Issue. If Jira displays a login error, log in and proceed after you are redirected to the form.

2. Complete the **Summary** and **Description** fields. In the **Description** field, include the documentation URL, chapter or section number, and a detailed description of the issue. Do not modify any other fields in the form.

3. Click **Create**.

CHAPTER 1. SUPPORTED CONVERSION PATHS

The Satellite conversions toolkit supports the following conversion paths:

- From CentOS Linux 7 on the x86_64 CPU architecture to Red Hat Enterprise Linux 7

CHAPTER 2. PREREQUISITES

Before you start the conversion process, ensure you have fulfilled the following preconditions:

- You have created a Red Hat account.

- You have purchased a Red Hat cloud subscription for the Satellite conversions toolkit.

CHAPTER 3. GETTING THE UUID OF YOUR SUBSCRIPTION MANIFEST

You have to know the UUID of your subscription manifest, because you will need it to configure Satellite. If you have received the UUID from your Sales representative, you can skip this procedure.

Prerequisites

- Ensure that a manifest has been created with your subscription allocated to the manifest. If the manifest already exists, you are aware of the name of the manifest and you can continue with the procedure below. Otherwise, follow these steps to create a manifest and allocate your subscription:

    1. Create a subscription allocation with **Satellite 6.14** as the type of subscription management application. For more information, see Creating a subscription allocation for a disconnected Satellite Server.

    2. Add your subscription to the subscription allocation. For more information, see Adding subscriptions to a subscription allocation for a disconnected Satellite Server.

> **NOTE**
>
> Even if your Satellite is technically connected Satellite Server, you have to follow the procedures that are designated for disconnected Satellite Server. In this scenario, that is the required approach.

Procedure

1. Navigate to **Services** > **Subscriptions and Spend** > **Manifests** in your Red Hat Hybrid Cloud Console.

2. Locate the manifest by its name and note the **UUID** of the manifest.

Next steps

- Create an activation key.

CHAPTER 4. CREATING AN ACTIVATION KEY

You have to create an activation key and enable required repositories for the Satellite conversions toolkit.

Procedure

1. Navigate to **Services** > **System Configuration** > **Activation Keys** in your Red Hat Hybrid Cloud Console.

2. Click **Create activation key**.

3. Enter a name for your activation key.

4. Click **Next**.

5. On the **Select Workload** screen, select **Latest release**.

6. Click **Next**.

7. Optional: On the **Select system purpose** screen, select the role, SLA, and usage.

8. Click **Next**.

9. Review the information for the new activation key and click **Create**.

10. Click **View activation key**.

11. Click **Add repositories**.

12. Select the following repositories:

    - Red Hat Satellite 6.14 for RHEL 8 x86_64 (RPMs)

    - Red Hat Satellite Maintenance 6.14 for RHEL 8 x86_64 (RPMs)

    - Red Hat Satellite Utils 6.14 for RHEL 8 x86_64 (RPMs)

13. Click **Save changes**.

Next steps

- Prepare a RHEL machine with the conversions toolkit.

Additional resources

- Getting started with activation keys on the Hybrid Cloud Console

CHAPTER 5. PREPARING A RHEL MACHINE WITH THE CONVERSIONS TOOLKIT

You can deploy the Satellite conversions toolkit by following one of these options:

- Section 5.1, "Preparing a Virtual Machine on Amazon Web Services"

- Section 5.2, "Preparing a Virtual Machine on Google Cloud Platform"

- Section 5.3, "Preparing a Virtual Machine on Microsoft Azure"

- Section 5.4, "Preparing a Virtual Machine on VMware vSphere"

- Section 5.5, "Preparing a QEMU Virtual Machine"

- Section 5.6, "Preparing a Bare-Metal Machine"

Review the hardware requirements for Red Hat Satellite. For more information, see System Requirements in *Installing Satellite Server in a Connected Network Environment* .

5.1. PREPARING A VIRTUAL MACHINE ON AMAZON WEB SERVICES

If you want to deploy the conversions toolkit on a virtual machine on Amazon Web Services (AWS), you can build an image containing Red Hat Enterprise Linux 8 and repositories for the toolkit, and launch the image from the Red Hat Hybrid Cloud Console.

Prerequisites

- You have created an activation key. For more information, see Chapter 4, *Creating an Activation Key*.

- Ensure that the firewall configuration of your cloud environment allows inbound and outbound traffic for the following ports:

  - 67/udp

  - 68/udp

  - 80/tcp

  - 443/tcp

  - 8000/tcp

  - 8140/tcp

  - 8443/tcp

  - 9090/tcp

Procedure

1. Connect your AWS account to the Red Hat Hybrid Cloud Console. For more information, see Connecting an AWS account to the Red Hat Hybrid Cloud Console .

2. Build a RHEL image with the conversions toolkit.

a. Navigate to **Services** > **Inventories** > **Images** in your Red Hat Hybrid Cloud Console.

b. Click **Create image**.

c. On the **Image output** screen, from the **Release** menu, select **Red Hat Enterprise Linux (RHEL) 8**.

d. Ensure that the **x86_64** architecture is selected.

e. Under **Select target environments**, select **Amazon Web Services**.

f. Click **Next**.

g. Under the **Share method**, ensure that **Use an account configured from Sources.**is selected.

h. Select your AWS source by name.

i. Click **Next**.

j. On the **Register** screen, under the **Registration method**, ensure that **Automatically register…** is selected.

k. Select your activation key.

l. Click **Next**.

m. On the **File system configuration** screen, ensure **Use automatic partitioning** is selected.

n. Click **Next**.

o. On the **Additional Red Hat packages** screen, click **Next**.

p. On the **Custom repositories** screen, click **Next**.

q. On the **Details** screen, enter a name for the image and, optionally, a description.

r. Click **Next**.

s. Review image details.

t. Click **Create image**.

3. Launch the image on AWS. Red Hat recommends that you select **c3.4xlarge** as the instance type. For more information, see Launching a customized RHEL image on AWS .

Next steps

- Install Satellite .

5.2. PREPARING A VIRTUAL MACHINE ON GOOGLE CLOUD PLATFORM

If you want to deploy the conversions toolkit on a virtual machine on Google Cloud Platform (GCP), you can build an image containing Red Hat Enterprise Linux 8 and repositories for the toolkit, and launch the image from the Red Hat Hybrid Cloud Console.

Prerequisites

- You have created an activation key. For more information, see Chapter 4, *Creating an Activation Key*.

- Ensure that the firewall configuration of your cloud environment allows inbound and outbound traffic for the following ports:

  - 67/udp

  - 68/udp

  - 80/tcp

  - 443/tcp

  - 8000/tcp

  - 8140/tcp

  - 8443/tcp

  - 9090/tcp

Procedure

1. Connect your GCP project to the Red Hat Hybrid Cloud Console. For more information, see Connecting GCP project to the Red Hat Hybrid Cloud Console .

2. Build a RHEL image with the conversions toolkit.

   a. Navigate to **Services** > **Inventories** > **Images** in your Red Hat Hybrid Cloud Console.

   b. Click **Create image**.

   c. On the **Image output** screen, from the **Release** menu, select **Red Hat Enterprise Linux (RHEL) 8**.

   d. Ensure that the **x86_64** architecture is selected.

   e. Under **Select target environments**, select **Google Cloud Platform**.

   f. Click **Next**.

   g. Under **Select image sharing**, ensure that **Share image with Google account** is selected.

   h. Select your account type and enter your GCP credentials.

   i. Click **Next**.

   j. On the **Register** screen, under the **Registration method**, ensure that **Automatically register...** is selected.

   k. Select your activation key.

   l. Click **Next**.

   m. On the **File system configuration** screen, ensure **Use automatic partitioning** is selected.

n. Click **Next**.

o. On the **Additional Red Hat packages** screen, click **Next**.

p. On the **Custom repositories** screen, click **Next**.

q. On the **Details** screen, enter a name for the image and, optionally, a description.

r. Click **Next**.

s. Review image details.

t. Click **Create image**.

3. Launch the image on GCP. Red Hat recommends that you select **e2-standard-8** as the machine type. For more information, see Launching a customized RHEL image on the Google Cloud Platform.

Next steps

- Install Satellite .

5.3. PREPARING A VIRTUAL MACHINE ON MICROSOFT AZURE

If you want to deploy the conversions toolkit on a virtual machine on Microsoft Azure, you can build an image containing Red Hat Enterprise Linux 8 and repositories for the toolkit, and launch the image from the Red Hat Hybrid Cloud Console.

Prerequisites

- You have created an activation key. For more information, see Chapter 4, *Creating an Activation Key*.

- Ensure that the firewall configuration of your cloud environment allows inbound and outbound traffic for the following ports:

  - 67/udp

  - 68/udp

  - 80/tcp

  - 443/tcp

  - 8000/tcp

  - 8140/tcp

  - 8443/tcp

  - 9090/tcp

Procedure

1. Connect your Microsoft Azure account to the Red Hat Hybrid Cloud Console. For more information, see Connecting Microsoft Azure account to the Red Hat Hybrid Cloud Console .

2. Build a RHEL image with the conversions toolkit.

    a. Navigate to **Services > Inventories > Images** in your Red Hat Hybrid Cloud Console.

    b. Click **Create image**.

    c. On the **Image output** screen, from the **Release** menu, select **Red Hat Enterprise Linux (RHEL) 8**.

    d. Ensure that the **x86_64** architecture is selected.

    e. Under **Select target environments**, select **Microsoft Azure**.

    f. Click **Next**.

    g. Under the **Share method**, ensure that **Use an account configured from Sources.**is selected.

    h. Select your Microsoft Azure source by name and a resource group.

    i. Click **Next**.

    j. On the **Register** screen, under the **Registration method**, ensure that **Automatically register...** is selected.

    k. Select your activation key.

    l. Click **Next**.

    m. On the **File system configuration** screen, select **Manually configure partitions**. Allocate at least 20 GB of space for the / partition.

    n. Click **Next**.

    o. On the **Additional Red Hat packages** screen, click **Next**.

    p. On the **Custom repositories** screen, click **Next**.

    q. On the **Details** screen, enter a name for the image and, optionally, a description.

    r. Click **Next**.

    s. Review image details.

    t. Click **Create image**.

3. Launch the image on Microsoft Azure. Red Hat recommends that you select **Standard_D12_v2** as the instance size. For more information, see Launching a customized RHEL image on Microsoft Azure.

Next steps

- Install Satellite .

5.4. PREPARING A VIRTUAL MACHINE ON VMWARE VSPHERE

If you want to deploy the conversions toolkit on a virtual machine on VMware vSphere, you can build an image containing Red Hat Enterprise Linux 8 and repositories for the toolkit, and boot the image.

Prerequisites

- You have created an activation key. For more information, see Chapter 4, *Creating an Activation Key*.

Procedure

1. Build a RHEL image with the conversions toolkit.

   a. Navigate to **Services** > **Inventories** > **Images** in your Red Hat Hybrid Cloud Console.

   b. Click **Create image**.

   c. On the **Image output** screen, from the **Release** menu, select **Red Hat Enterprise Linux (RHEL) 8**.

   d. Ensure that the **x86_64** architecture is selected.

   e. Under **Select target environments**, select **VMware vSphere**.

   f. Select the required format for the image.

   g. Click **Next**.

   h. On the **Register** screen, under the **Registration method**, ensure that **Automatically register…** is selected.

   i. Select your activation key.

   j. Click **Next**.

   k. On the **File system configuration** screen, select **Manually configure partitions**. Allocate at least 20 GB of space for the / partition.

   l. Click **Next**.

   m. On the **Additional Red Hat packages** screen, click **Next**.

   n. On the **Custom repositories** screen, click **Next**.

   o. On the **Details** screen, enter a name for the image and, optionally, a description.

   p. Click **Next**.

   q. Review image details.

   r. Click **Create image**.

2. Download the built image from the Red Hat Hybrid Cloud Console.

3. Boot the image in a virtual machine on VMware.

Next steps

- **Install Satellite** .

5.5. PREPARING A QEMU VIRTUAL MACHINE

If you want to deploy the conversions toolkit on a QEMU virtual machine, you can build an image containing Red Hat Enterprise Linux 8 and repositories for the toolkit, and boot the image.

Prerequisites

- You have created an activation key. For more information, see Chapter 4, *Creating an Activation Key*.

Procedure

1. Build a RHEL image with the conversions toolkit.

   a. Navigate to **Services** > **Inventories** > **Images** in your Red Hat Hybrid Cloud Console.

   b. Click **Create image**.

   c. On the **Image output** screen, from the **Release** menu, select **Red Hat Enterprise Linux (RHEL) 8**.

   d. Ensure that the **x86_64** architecture is selected.

   e. Under **Select target environments**, select **Virtualization – Guest image**

   f. Click **Next**.

   g. On the **Register** screen, under the **Registration method**, ensure that **Automatically register…** is selected.

   h. Select your activation key.

   i. Click **Next**.

   j. On the **File system configuration** screen, ensure **Use automatic partitioning** is selected.

   k. Click **Next**.

   l. On the **Additional Red Hat packages** screen, search for the **firewalld** package and add it to chosen packages.

   m. Click **Next**.

   n. On the **Custom repositories** screen, click **Next**.

   o. On the **Details** screen, enter a name for the image and, optionally, a description.

   p. Click **Next**.

   q. Review image details.

   r. Click **Create image**.

2. Download the built image from the Red Hat Hybrid Cloud Console.

3. Boot the image in a virtual machine.

Next steps

- [Install Satellite](#).

5.6. PREPARING A BARE-METAL MACHINE

If you want to deploy the conversions toolkit on a bare-metal machine, you can build an image containing Red Hat Enterprise Linux 8 and repositories for the toolkit, and boot the image.

Prerequisites

- You have created an activation key. For more information, see Chapter 4, *Creating an Activation Key*.

Procedure

1. Build a RHEL image with the conversions toolkit.

   a. Navigate to **Services** > **Inventories** > **Images** in your Red Hat Hybrid Cloud Console.

   b. Click **Create image**.

   c. On the **Image output** screen, from the **Release** menu, select **Red Hat Enterprise Linux (RHEL) 8**.

   d. Ensure that the **x86_64** architecture is selected.

   e. Under **Select target environments**, select **Bare metal - Installer**.

   f. Click **Next**.

   g. On the **Register** screen, under the **Registration method**, ensure that **Automatically register…** is selected.

   h. Select your activation key.

   i. Click **Next**.

   j. On the **File system configuration** screen, ensure **Use automatic partitioning** is selected.

   k. Click **Next**.

   l. On the **Additional Red Hat packages** screen, click **Next**.

   m. On the **Custom repositories** screen, click **Next**.

   n. On the **Details** screen, enter a name for the image and, optionally, a description.

   o. Click **Next**.

   p. Review image details.

   q. Click **Create image**.

2. Download the built image from the Red Hat Hybrid Cloud Console.

3. Boot the image on your bare-metal machine.

Next steps

- Install Satellite .

CHAPTER 6. INSTALLING SATELLITE

Run the conversions toolkit to install Satellite on your RHEL machine.

Prerequisites

- You have prepared a RHEL machine with the conversions toolkit. For more information, see Chapter 5, *Preparing a RHEL Machine with the Conversions Toolkit* .

Procedure

1. Log in to the machine by using SSH.

2. Switch to the root user.

3. If the root has no password, set a password:

   ```
   # passwd
   ```

4. Install the Satellite conversions toolkit:

   ```
   # dnf install satellite-convert2rhel-toolkit
   ```

5. Install Satellite by running the following command:

   ```
   # satellite-convert2rhel-toolkit install
   ```

   Upon a successful installation, the script prints the following message: **Satellite has been successfully installed.**

6. Configure your DNS records to the Satellite hostname, for example in **/etc/hosts**. Satellite is installed with the **satellite.internal** hostname.

Next steps

- Configure Satellite.

CHAPTER 7. CONFIGURING SATELLITE FOR CONVERSIONS

Run the conversions toolkit to configure Satellite for conversions.

Prerequisites

- You have got the UUID of your subscription manifest. For more information, see Chapter 3, *Getting the UUID of your Subscription Manifest* .

- You have successfully installed Satellite. For more information, see Chapter 6, *Installing Satellite*.

Procedure

1. Log in to the Satellite machine by using SSH.

2. Switch to the root user.

3. Configure Satellite by running the following command:

   ```
   # satellite-convert2rhel-toolkit configure \
   --manifest_uuid Your_Manifest_UUID \
   --username 'Your_Red_Hat_Account_Username' \
   --password 'Your_Red_Hat_Account_Password'
   ```

   Upon a successful configuration, the script prints the following message: **Satellite has been successfully configured.**

4. Log in to the Satellite web UI.

   a. Enter the FQDN of your Satellite instance in your web browser: **https://satellite.internal**

   b. Enter the default credentials: **admin**/**admin**

> **NOTE**
>
> Even if Satellite configuration has finished, synchronization of repositories from the Red Hat CDN to Satellite is running in the background and will take some time to complete. You can verify the status of the synchronization in the Satellite web UI:
>
> 1. Navigate to **Monitor** > **Satellite Tasks** > **Tasks**.
>
> 2. Click on the **Running** card. If you can see any **Synchronize repository** tasks, the synchronization is still running.
>
> 3. Optional: Click **Refresh Data** to update the status of the tasks.

Next steps

- Register your hosts for conversion .

CHAPTER 8. REGISTERING HOSTS FOR CONVERSION

You have to register your hosts to Satellite before you can convert them to Red Hat Enterprise Linux. You have Satellite generate a registration command that you then execute on each host.

You can run the registration command in bulk by using a configuration management tool, such as Ansible or Puppet, to register a larger amount of hosts.

Prerequisites

- You have configured Satellite for conversions. For more information, see Chapter 7, *Configuring Satellite for Conversions*.

- Ensure that a time-synchronization tool is installed and enabled on your hosts. Satellite and all hosts must be synchronized with the same NTP server.

- Ensure that the SSL CA file of Satellite is distributed onto your hosts. You can find the location of the SSL CA file by navigating to **Administer** > **Settings** > **Authentication** and locating the value of the **SSL CA file** setting.

Procedure

1. Optional: Enable reporting to Red Hat Insights. The conversions toolkit disables new hosts from reporting to Insights by setting the global parameter **host_registration_insights** to **false**. For more information, see Global Parameters for Registration in *Managing Hosts*.

2. In to the Satellite web UI, navigate to **Hosts** > **Register Host**.

3. In the **Host group** field, select the **CentOS 7 converting** host group.

4. In the **Activation Keys** field, ensure that the **convert2rhel_centos7** activation key is present.

5. Click **Generate**.

6. Copy the generated registration command.

7. Log in to a host by using SSH and run the registration command as root.

Verification

- In the Satellite web UI, navigate to **Hosts** > **All Hosts**. You can find all hosts that you have registered to Satellite.

Next steps

- Convert your hosts.

Additional resources

- Registering Hosts by Using Global Registration in *Managing Hosts*

CHAPTER 9. CONVERTING HOSTS

You can convert your hosts by using the remote execution feature in Satellite.

Prerequisites

- You have configured Satellite. For more information, see Chapter 7, *Configuring Satellite for Conversions*.

- You have registered your hosts to Satellite. For more information, see Chapter 8, *Registering Hosts for Conversion*.

Procedure

1. Run pre-conversion analysis on your hosts.

   a. In the Satellite web UI, navigate to **Monitor** > **Jobs**.

   b. Click **Run Job**.

   c. In the **Job category**, select **Convert 2 RHEL**.

   d. In the **Job template**, select **Convert2RHEL analyze**.

   e. Click **Next**.

   f. In the target hosts filter, select **Host groups** and select the **CentOS 7 converting** host group.

   g. Click **Run on selected hosts**.

   h. Satellite displays the job invocation page.

   i. Click the name of a host to review the output of the job invocation. For more information, see Reviewing the pre-conversion analysis report in *Converting from an RPM-based Linux distribution to RHEL*.

   j. Resolve all issues that are blocking the conversions. You can use remote execution in Satellite to resolve configuration issues. For more information, see Executing a Remote Job in *Managing Hosts*.

   Repeat this step until you resolve all blocking issues.

2. Run conversion on your hosts.

   a. In the Satellite web UI, navigate to **Monitor** > **Jobs**.

   b. Click **Run Job**.

   c. In the **Job category**, select **Convert 2 RHEL**.

   d. In the **Job template**, select **Convert to RHEL**.

   e. Click **Next**.

   f. In the target hosts filter, select **Host groups** and select the **CentOS 7 converting** host group.

g. In the **Restart** field, select **yes**.

h. In the **Activation Key** field, select the **convert2rhel_rhel7** activation key.

i. Click **Run on selected hosts**.

Verification

1. In the Satellite web UI, navigate to **Hosts** > **All Hosts**.

2. Review the values in the **OS** column. The converted hosts appear with a **RHEL 7.x** value.

CHAPTER 10. NEXT STEPS AFTER CONVERSION

If you want to update your hosts, ensure to configure your hosts to consume content from the Red Hat CDN. You can do that by running the following command on your hosts:

```
# subscription-manager --unregister && \
subscription-manager register \
--activationkey Your_Activation_Key \
--org Your_Red_Hat_Organization_ID
```

You can run this command on all registered hosts by using the remote execution feature in Satellite. For more information, see Executing a Remote Job in *Managing Hosts*.
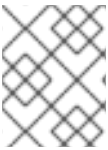
> **NOTE**
>
> If you want to continue managing your hosts by using Satellite, please contact your Red Hat Sales representative.