



## Red Hat Satellite 6.11

# Upgrading and Updating Red Hat Satellite

Upgrading and updating Red Hat Satellite Server and Capsule Server



# Red Hat Satellite 6.11 Upgrading and Updating Red Hat Satellite

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Upgrading and updating Red Hat Satellite Server and Capsule Server

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## Abstract

This guide describes upgrading and updating Red Hat Satellite Server, Capsule Server, and hosts.

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# PREFACE

In this guide, the terms upgrade, update, and migrate have the following meanings:

## Upgrading

The process of advancing your Satellite Server and Capsule Server installations from a y-stream release to the next, for example Satellite 6.10 to Satellite 6.11. For more information, see [Chapter 1, \*Upgrading Overview\*](#).

## Updating

The process of advancing your Satellite Server and Capsule Server installations from a z-stream release to the next, for example Satellite 6.11.0 to Satellite 6.11.1.

## Migrating

The process of moving an existing Satellite installation to a new instance. For more information, see [Chapter 5, \*Migrating Satellite to a New Red Hat Enterprise Linux System\*](#) .

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# CHAPTER 1. UPGRADING OVERVIEW

Review prerequisites and available upgrade paths below before upgrading your current Red Hat Satellite installation to Red Hat Satellite 6.11.

For interactive upgrade instructions, you can also use the Red Hat Satellite Upgrade Helper on the Red Hat Customer Portal. This application provides you with an exact guide to match your current version number. You can find instructions that are specific to your upgrade path, as well as steps to prevent known issues. For more information, see [Satellite Upgrade Helper](#) on the Red Hat Customer Portal.

Note that you can upgrade Capsules separately from Satellite. For more information, see [Section 1.4, “Upgrading Capsules Separately from Satellite”](#).

## 1.1. PREREQUISITES

Upgrading to Satellite 6.11 affects your entire Satellite infrastructure. Before proceeding, complete the following:

- Read the Red Hat Satellite 6.11 [Release Notes](#).
- Plan your upgrade path. For more information, see [Section 1.2, “Upgrade Paths”](#).
- Plan for the required downtime. Satellite services are shut down during the upgrade. The upgrade process duration might vary depending on your hardware configuration, network speed, and the amount of data that is stored on the server.  
Upgrading Satellite takes approximately 1–2 hours.

Upgrading Capsule takes approximately 10–30 minutes.

- Ensure that you have sufficient storage space on your server. For more information, see [Preparing your Environment for Installation](#) in *Installing Satellite Server from a Connected Network* and [Preparing your Environment for Installation](#) in *Installing Capsule Server*.
- Back up your Satellite Server and all Capsule Servers. For more information, see [Backing Up Satellite Server and Capsule Server](#) in the *Administering Red Hat Satellite* guide.
- Plan for updating any scripts you use that contain Satellite API commands because some API commands differ between versions of Satellite.



### WARNING

If you customize configuration files, manually or use a tool such as Hiera, these customizations are overwritten when the installation script runs during upgrading or updating. You can use the **--noop** option with the `satellite-installer` script to test for changes. For more information, see the Red Hat Knowledgebase solution [How to use the noop option to check for changes in Satellite config files during an upgrade](#).

## 1.2. UPGRADE PATHS

You can upgrade to Red Hat Satellite 6.11 from Red Hat Satellite 6.10.

Satellite Servers and Capsule Servers on earlier versions must first be upgraded to Satellite 6.10. For more information, see the [Upgrading and Updating Red Hat Satellite to 6.10](#).

## High-Level Upgrade Steps

The high-level steps in upgrading Satellite to 6.11 are as follows:

1. Optional: Clone your existing Satellite Servers. For more information, see [Chapter 2, Cloning Satellite Server](#).
2. Upgrade Satellite Server and all Capsule Servers to Satellite 6.11. For more information, see [Section 3.1, "Upgrading Satellite Server"](#).
3. Upgrade all Capsule Servers to 6.11. For more information, see [Section 3.3, "Upgrading Capsule Servers"](#).
4. Upgrade to Satellite Client 6 on all content hosts. For more information, see [Section 3.4, "Upgrading Content Hosts"](#).
5. Optional: After you upgrade your Satellite, you can also upgrade the operating system on your Satellite Servers and Capsules to Red Hat Enterprise Linux 8. There are two ways of upgrading your OS:
  - [Chapter 4, Upgrading Satellite or Capsule to Red Hat Enterprise Linux 8 In-Place Using Leapp](#)
  - [Chapter 5, Migrating Satellite to a New Red Hat Enterprise Linux System](#)
6. Continue with [Section 3.6, "Performing Post-Upgrade Tasks"](#).

## 1.3. FOLLOWING THE PROGRESS OF THE UPGRADE

Because of the lengthy upgrade time, use a utility such as **tmux** to suspend and reattach a communication session. You can then check the upgrade progress without staying connected to the command shell continuously. For more information, see the **tmux** manual page.

If you lose connection to the command shell where the upgrade command is running you can see the logs in `/var/log/foreman-installer/satellite.log` to check if the process completed successfully.

## 1.4. UPGRADING CAPSULES SEPARATELY FROM SATELLITE

You can upgrade Satellite to version 6.11 and keep Capsules at version 6.10 until you have the capacity to upgrade them too.

All the functionality that worked previously works on 6.10 Capsules. However, the functionality added in the 6.11 release will not work until you upgrade Capsules to 6.11.

Upgrading Capsules after upgrading Satellite can be useful in the following example scenarios:

1. If you want to have several smaller outage windows instead of one larger window.
2. If Capsules in your organization are managed by several teams and are located in different locations.

3. If you use a load-balanced configuration, you can upgrade one load-balanced Capsule and keep other load-balanced Capsules at one version lower. This allows you to upgrade all Capsules one after another without any outage.

## CHAPTER 2. CLONING SATELLITE SERVER

You can clone the Satellite Server to create instances for trying out upgrades and the migration of instances to a different machine or operating system. This is an optional step to provide more flexibility during the upgrade.



### NOTE

The created instances are not supposed to run in parallel in a production environment. You must decommission any testing instances after completing the tests or any old instances after completing the migration.

Use the following procedures to clone your Satellite instances to preserve your environments in preparation for upgrade.

The Satellite clone tool does not support migrating a Capsule Server to Red Hat Enterprise Linux 7. Instead you must backup the existing Capsule Server, restore it on Red Hat Enterprise Linux 7, then reconfigure Capsule Server.

### Terminology

Ensure that you understand the following terms:

#### Source server

The origin of the clone.

#### Target server

The new server that you copy files to and clone the source server to.

## 2.1. CLONING PROCESS OVERVIEW

1. Back up the source server.
2. Clone the source server to the target server.
3. Power off the source server.
4. Update the network configuration on the target server to match the target server's IP address with its new host name.
5. Restart **goferd** in Content hosts and Capsules to refresh the connection.
6. Test the new target server.

## 2.2. PREREQUISITES

To clone Satellite Server, ensure that you have the following resources available:

- A minimal install of Red Hat Enterprise Linux 7 to become the target server. Do not install Red Hat Enterprise Linux 7 software groups, or third-party applications. Ensure that your server complies with all the specifications of [Preparing your Environment for Installation](#) in *Installing Satellite Server*.
- A backup from Satellite 6.10 that you make using the **satellite-maintain backup** script. You can use a backup with or without Pulp data.

- A Satellite subscription for the target server.

Before you begin cloning, ensure the following conditions exist:

- The target server is on an isolated network. This avoids unwanted communication with Capsule Servers and hosts.
- The target server has the capacity to store all your backup files from the source server.

### Customized configuration files

If you have any customized configurations on your source server that are not managed by the **satellite-installer** tool or Satellite backup process, you must manually back up these files.

## 2.3. PULP DATA CONSIDERATIONS

You can clone Satellite server without including Pulp data. However, for your cloned environment to work, you do require Pulp data. If the target server does not have Pulp data, it is not a fully working Satellite.

To transfer Pulp data to a target server, you have two options:

- Clone using backup with Pulp data
- Clone using backup without Pulp data and copy `/var/lib/pulp` manually from the source server.

If your **pulp\_data.tar** file is greater than 500 GB, or if you use a slow storage system, such as NFS, and your **pulp\_data.tar** file is greater than 100 GB, do not include **pulp\_data.tar** in the backup because this can cause memory errors during extraction. Copy the **pulp\_data.tar** file from the source server to the target server.

### To back up without Pulp data

Follow the steps in the procedure in [Section 2.4, “Cloning Satellite Server”](#) and replace the steps that involve cloning with Pulp data with the following steps:

1. Perform a backup with PostgreSQL databases active excluding the Pulp data:

```
# satellite-maintain backup offline --skip-pulp-content \
--assumeeyes /var/backup
```

2. Stop and disable Satellite services:

```
# satellite-maintain service stop
# satellite-maintain service disable
```

3. Copy the Pulp data to the target server:

```
# rsync --archive --partial --progress --compress \
/var/lib/pulp target_server.example.com:/var/lib/pulp
```

Proceed to [Section 2.4.2, “Cloning to the Target Server”](#).

## 2.4. CLONING SATELLITE SERVER

Use the following procedures to clone Satellite Server. Note that because of the high volume of data that you must copy and transfer as part of these procedures, it can take a significant amount of time to complete.

### 2.4.1. Preparing the source server for cloning

On the source server, complete the following steps:

1. Verify the Pool ID of your Satellite subscription:

```
# subscription-manager list --consumed \  
--matches 'Red Hat Satellite'|grep "Pool ID:"|awk '{print $3}'
```

Note the *Pool ID* for later use.

2. Remove the Red Hat Satellite subscription:

```
# subscription-manager remove --serial=$(subscription-manager list \  
--consumed \  
--matches 'Red Hat Satellite'|grep "Serial:"|awk '{print $2}')
```

3. Determine the size of the Pulp data:

```
# du -sh /var/lib/pulp/
```

4. If you have less than 500 GB of Pulp data, perform a backup with PostgreSQL databases active including the Pulp data. If you have more than 500 GB of Pulp data, skip the following steps and complete the steps in [Section 2.3, "Pulp Data Considerations"](#) before you continue.

```
# satellite-maintain backup offline --assumeeyes /var/backup
```

5. Stop and disable Satellite services:

```
# satellite-maintain service stop  
# satellite-maintain service disable
```

Proceed to [Section 2.4.2, "Cloning to the Target Server"](#).

### 2.4.2. Cloning to the Target Server

To clone your server, complete the following steps on your target server:

1. The **satellite-clone** tool defaults to using **/backup/** as the backup folder. If you copy to a different folder, update the **backup\_dir** variable in the **/etc/satellite-clone/satellite-clone-vars.yml** file.
2. Place the backup files from the source Satellite in the **/backup/** folder on the target server. You can either mount the shared storage or copy the backup files to the **/backup/** folder on the target server.
3. Power off the source server.
4. Enter the following commands to register to the Customer Portal, attach subscriptions, and enable only the required subscriptions:

```
# subscription-manager register your_customer_portal_credentials
# subscription-manager attach --pool=pool_ID
# subscription-manager repos --disable=*
# subscription-manager repos \
--enable=rhel-7-server-rpms \
--enable=rhel-server-rhsc7-7-rpms \
--enable=rhel-7-server-satellite-maintenance-6-rpms \
--enable=rhel-7-server-ansible-2.9-rpms \
--enable=rhel-7-server-satellite-6.10-rpms
```

5. Install the **satellite-clone** package:

```
# yum install satellite-clone
```

After you install the **satellite-clone** tool, you can adjust any configuration to suit your own deployment in the `/etc/satellite-clone/satellite-clone-vars.yml` file.

6. Run the **satellite-clone** tool:

```
# satellite-clone
```

7. Reconfigure DHCP, DNS, TFTP, and remote execution services. The cloning process disables these services on the target Satellite Server to avoid conflict with the source Satellite Server.
8. Reconfigure and enable DHCP, DNS, and TFTP in the Satellite web UI. For more information, see [Configuring External Services on Satellite Server](#) in *Installing Satellite Server*.
9. Enable remote execution:

```
# satellite-installer --scenario satellite \
--enable-foreman-plugin-remote-execution \
--enable-foreman-proxy-plugin-remote-execution-ssh
```

10. Log on to the Satellite web UI, with the username **admin** and the password **changeme**. Immediately update the admin password to secure credentials.
11. Ensure that the correct organization is selected.
12. In the Satellite web UI, navigate to **Content > Subscriptions**, then click **Manage Manifest**.
13. Click the **Refresh** button, then click **Close** to return to the list of subscriptions.
14. Verify that the available subscriptions are correct.
15. Follow the instructions in the `/usr/share/satellite-clone/logs/reassociate_capsules.txt` file to restore the associations between Capsules and their lifecycle environments.
16. Update your network configuration, for example, DNS, to match the target server's IP address with its new host name. The **satellite-clone** tool changes the host name to the source server's host name. If you want to change the host name to something different, you can use the **satellite-change-hostname** tool. For more information, see [Renaming a Satellite or Capsule Server](#) in *Administrating Red Hat Satellite*.
17. If the source server uses the **virt-who** daemon, install and configure it on the target server. Copy all the **virt-who** configuration files in the `/etc/virt-who.d/` directory from the source server

to the same directory on the target server. For more information, see [Configuring Virtual Machine Subscriptions in Red Hat Satellite](#). After you perform an upgrade using the following chapters, you can safely decommission the source server.



## CHAPTER 3. UPGRADING RED HAT SATELLITE

Use the following procedures to upgrade your existing Red Hat Satellite to Red Hat Satellite 6.11:

1. Review [Section 1.1, “Prerequisites”](#).
2. [Section 3.1, “Upgrading Satellite Server”](#)
3. [Section 3.2, “Synchronizing the New Repositories”](#)
4. [Section 3.3, “Upgrading Capsule Servers”](#)
5. [Section 3.4, “Upgrading Content Hosts”](#)
6. [Section 3.6, “Performing Post-Upgrade Tasks”](#)

### 3.1. UPGRADING SATELLITE SERVER

This section describes how to upgrade Satellite Server from 6.10 to 6.11. You can upgrade from any minor version of Satellite Server 6.10.

#### Before You Begin

- Note that you can upgrade Capsules separately from Satellite. For more information, see [Section 1.4, “Upgrading Capsules Separately from Satellite”](#).
- Review and update your firewall configuration prior to upgrading your Satellite Server. For more information, see [Preparing your environment for installation](#) in *Installing Satellite Server*.
- Ensure that you do not delete the manifest from the Customer Portal or in the Satellite web UI because this removes all the entitlements of your content hosts.
- If you have edited any of the default job or provisioning templates, back up the files either by cloning or exporting them. Cloning is the recommended method because that prevents them being overwritten in future updates or upgrades. To confirm if a template has been edited, you can view its **History** before you upgrade or view the changes in the audit log after an upgrade. In the Satellite web UI, navigate to **Monitor > Audits** and search for the template to see a record of changes made. If you use the export method, restore your changes by comparing the exported template and the default template, manually applying your changes.

#### Capsule Considerations

- If you use Content Views to control updates to a Capsule Server’s base operating system, or for Capsule Server repository, you must publish updated versions of those Content Views.
- Note that Satellite Server upgraded from 6.10 to 6.11 can use Capsule Servers still at 6.10.

**WARNING**

If you implemented custom certificates, you must retain the content of both the **/root/ssl-build** directory and the directory in which you created any source files associated with your custom certificates.

Failure to retain these files during an upgrade causes the upgrade to fail. If these files have been deleted, they must be restored from a backup in order for the upgrade to proceed.

**Upgrade Scenarios**

- To upgrade a Satellite Server connected to the Red Hat Content Delivery Network, proceed to [Section 3.1.1, “Upgrading a Connected Satellite Server”](#) .
- To upgrade a Satellite Server not connected to the Red Hat Content Delivery Network, proceed to [Section 3.1.2, “Upgrading a Disconnected Satellite Server”](#) .

You cannot upgrade a self-registered Satellite. You must migrate a self-registered Satellite to the Red Hat Content Delivery Network (CDN) and then perform the upgrade.

**FIPS mode**

You cannot upgrade Satellite Server from a RHEL base system that is not operating in FIPS mode to a RHEL base system that is operating in FIPS mode.

To run Satellite Server on a Red Hat Enterprise Linux base system operating in FIPS mode, you must install Satellite on a freshly provisioned RHEL base system operating in FIPS mode. For more information, see [Preparing your environment for installation](#) in *Installing Satellite Server*.

**3.1.1. Upgrading a Connected Satellite Server**

Use this procedure for a Satellite Server with access to the public internet

**WARNING**

If you customize configuration files, manually or using a tool such as Hiera, these changes are overwritten when the installation script runs during upgrading or updating. You can use the **--noop** option with the `satellite-installer` script to test for changes. For more information, see the Red Hat Knowledgebase solution [How to use the noop option to check for changes in Satellite config files during an upgrade](#).

**Upgrade Satellite Server**

1. Stop all Satellite services:

```
# satellite-maintain service stop
```

- 
- 2. Take a snapshot or create a backup:
  - On a virtual machine, take a snapshot.
  - On a physical machine, create a backup.

- 3. Start all Satellite services:

```
# satellite-maintain service start
```

- 4. Optional: If you made manual edits to DNS or DHCP configuration in the `/etc/zones.conf` or `/etc/dhcp/dhcpd.conf` files, back up the configuration files because the installer only supports one domain or subnet, and therefore restoring changes from these backups might be required.
- 5. Optional: If you made manual edits to DNS or DHCP configuration files and do not want to overwrite the changes, enter the following command:

```
# satellite-installer --foreman-proxy-dns-managed=false \
--foreman-proxy-dhcp-managed=false
```

- 6. In the Satellite web UI, navigate to **Hosts** > **Discovered hosts**. On the Discovered Hosts page, power off and then delete the discovered hosts. From the **Select an Organization** menu, select each organization in turn and repeat the process to power off and delete the discovered hosts. Make a note to reboot these hosts when the upgrade is complete.
- 7. Ensure that the Satellite Maintenance repository is enabled:

```
# subscription-manager repos --enable \
rhel-7-server-satellite-maintenance-6.11-rpms
```

- 8. Check the available versions to confirm the version you want is listed:

```
# satellite-maintain upgrade list-versions
```

- 9. Use the health check option to determine if the system is ready for upgrade. When prompted, enter the hammer admin user credentials to configure **satellite-maintain** with hammer credentials. These changes are applied to the `/etc/foreman-maintain/foreman-maintain-hammer.yml` file.

```
# satellite-maintain upgrade check --target-version 6.11
```

Review the results and address any highlighted error conditions before performing the upgrade.

- 10. Because of the lengthy upgrade time, use a utility such as **tmux** to suspend and reattach a communication session. You can then check the upgrade progress without staying connected to the command shell continuously.

If you lose connection to the command shell where the upgrade command is running you can see the logged messages in the `/var/log/foreman-installer/satellite.log` file to check if the process completed successfully.

- 11. Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.11
```

12. Determine if the system needs a reboot:

a. Check the version of newest installed kernel:

```
# rpm --query --last kernel | head -n 1
```

b. Compare this to the version of currently running kernel:

```
# uname --kernel-release
```

13. Optional: If the newest kernel differs from the currently running kernel, reboot the system:

```
# reboot
```

14. If using a BASH shell, after a successful or failed upgrade, enter:

```
# hash -d satellite-maintain service 2> /dev/null
```

### 3.1.2. Upgrading a Disconnected Satellite Server

Use this procedure if your Satellite Server is not connected to the Red Hat Content Delivery Network.



#### WARNING

- If you customized configuration files, either manually or using a tool such as Hiera, these changes are overwritten when you enter the **satellite-maintain** command during upgrading or updating. You can use the **--noop** option with the **satellite-installer** command to review the changes that are applied during upgrading or updating. For more information, see the Red Hat Knowledgebase solution [How to use the noop option to check for changes in Satellite config files during an upgrade](#).
- The hammer import and export commands have been replaced with **hammer content-import** and **hammer content-export** tooling. If you have scripts that are using **hammer content-view version export**, **hammer content-view version export-legacy**, **hammer repository export**, or their respective import commands, you have to adjust them to use the **hammer content-export** command instead, along with its respective import command.
- If you implemented custom certificates, you must retain the content of both the **/root/ssl-build** directory and the directory in which you created any source files associated with your custom certificates. Failure to retain these files during an upgrade causes the upgrade to fail. If these files have been deleted, they must be restored from a backup in order for the upgrade to proceed.

#### Before You Begin

- Review and update your firewall configuration before upgrading your Satellite Server. For more information, see [Ports and Firewalls Requirements](#) in *Installing Satellite Server in a Disconnected Network Environment*.
- Ensure that you do not delete the manifest from the Customer Portal or in the Satellite web UI because this removes all the entitlements of your content hosts.
- Back up and remove all Foreman hooks before upgrading. Reinstate hooks only after Satellite is known to be working after the upgrade is complete.

## Upgrade Disconnected Satellite Server

1. Stop all Satellite services:

```
# satellite-maintain service stop
```

2. Take a snapshot or create a backup:

- On a virtual machine, take a snapshot.
- On a physical machine, create a backup.

3. Start all Satellite services:

```
# satellite-maintain service start
```

4. A pre-upgrade script is available to detect conflicts and list hosts which have duplicate entries in Satellite Server that can be unregistered and deleted after upgrade. In addition, it will detect hosts which are not assigned to an organization. If a host is listed under **Hosts > All hosts** without an organization association and if a content host with same name has an organization already associated with it then the content host will automatically be unregistered. This can be avoided by associating such hosts to an organization before upgrading. Run the pre-upgrade check script to get a list of hosts that can be deleted after upgrading. If any unassociated hosts are found, associating them to an organization before upgrading is recommended.

```
# foreman-rake katello:upgrade_check
```

5. Optional: If you made manual edits to DNS or DHCP configuration in the `/etc/zones.conf` or `/etc/dhcp/dhcpd.conf` files, back up the configuration files because the installer only supports one domain or subnet, and therefore restoring changes from these backups might be required.
6. Optional: If you made manual edits to DNS or DHCP configuration files and do not want to overwrite the changes, enter the following command:

```
# satellite-installer --foreman-proxy-dns-managed=false \
--foreman-proxy-dhcp-managed=false
```

7. In the Satellite web UI, navigate to **Hosts > Discovered hosts**. If there are discovered hosts available, turn them off and then delete all entries under the **Discovered hosts** page. Select all other organizations in turn using the organization setting menu and repeat this action as required. Reboot these hosts after the upgrade has completed.
8. Make sure all external Capsule Servers are assigned to an organization, otherwise they might get unregistered due to host-unification changes.

9. Remove old repositories:

```
# rm /etc/yum.repos.d/*
```

10. Stop Satellite services:

```
# satellite-maintain service stop
```

11. Obtain the latest ISO files by following the [Downloading the Binary DVD Images](#) procedure in *Installing Satellite Server in a Disconnected Network Environment* .
12. Create directories to serve as a mount point, mount the ISO images, and configure the **rhel7-server** or the **rhel8** repository:

### For Red Hat Enterprise Linux 8

Follow the [Configuring the Base Operating System with Offline Repositories in RHEL 8](#) procedure in *Installing Satellite Server in a Disconnected Network Environment* .

### For Red Hat Enterprise Linux 7

Follow the [Configuring the Base Operating System with Offline Repositories in RHEL 7](#) procedure in *Installing Satellite Server in a Disconnected Network Environment* .

Do not install or update any packages at this stage.

13. Configure the Satellite 6.11 repository from the ISO file.
  - a. Copy the ISO file's repository data file for the Red Hat Satellite packages:

```
# cp /media/sat6/Satellite/media.repo /etc/yum.repos.d/satellite.repo
```

- b. Edit the **/etc/yum.repos.d/satellite.repo** file:

```
# vi /etc/yum.repos.d/satellite.repo
```

- i. Change the default **InstallMedia** repository name to **Satellite-6.11**:

```
[Satellite-6.11]
```

- ii. Add the **baseurl** directive:

```
baseurl=file:///media/sat6/Satellite
```

14. Configure the Red Hat Satellite Maintenance repository from the ISO file.
  - a. Copy the ISO file's repository data file for Red Hat Satellite Maintenance packages:

```
# cp /media/sat6/Maintenance/media.repo /etc/yum.repos.d/satellite-maintenance.repo
```

- b. Edit the **/etc/yum.repos.d/satellite-maintenance.repo** file:

```
# vi /etc/yum.repos.d/satellite-maintenance.repo
```

- i. Change the default **InstallMedia** repository name to **Satellite-Maintenance**:

```
[Satellite-Maintenance]
```

- ii. Add the **baseurl** directive:

```
baseurl=file:///media/sat6/Maintenance/
```

15. If your Satellite runs on Red Hat Enterprise Linux 7, configure the Ansible repository from the ISO file.

- a. Copy the ISO file's repository data file for Ansible packages:

```
# cp /media/sat6/ansible/media.repo /etc/yum.repos.d/ansible.repo
```

- b. Edit the **/etc/yum.repos.d/ansible.repo** file:

```
# vi /etc/yum.repos.d/ansible.repo
```

- i. Change the default **InstallMedia** repository name to **Ansible**:

```
[Ansible]
```

- ii. Add the **baseurl** directive:

```
baseurl=file:///media/sat6/ansible/
```

16. If your Satellite runs on Red Hat Enterprise Linux 7, configure the Red Hat Software Collections repository from the ISO file.

- a. Copy the ISO file's repository data file for Red Hat Software Collections packages:

```
# cp /media/sat6/RHSCL/media.repo /etc/yum.repos.d/RHSCL.repo
```

- b. Edit the **/etc/yum.repos.d/RHSCL.repo** file:

```
# vi /etc/yum.repos.d/RHSCL.repo
```

- i. Change the default **InstallMedia** repository name to **RHSCL**:

```
[RHSCL]
```

- ii. Add the **baseurl** directive:

```
baseurl=file:///media/sat6/RHSCL/
```

17. Optional: If you have applied custom Apache server configurations, note that the custom configurations are reverted to the installation defaults when you perform the upgrade. To preview the changes that are applied during the upgrade, enter the **satellite-installer** command with the **--noop** (no operation) option. These changes are applied when you enter the **satellite-maintain upgrade** command in a following step.

- a. Add the following line to the **/etc/httpd/conf/httpd.conf** configuration file.

```
# Include /etc/httpd/conf.modules.d/*.conf
```

- b. Restart the **httpd** service.

```
# systemctl restart httpd
```

- c. Start the **postgresql** database services.

```
# systemctl start postgresql
```

- d. Enter the **satellite-installer** command with the **--noop** option:

```
# satellite-installer --scenario satellite --verbose --noop
```

Review the `/var/log/foreman-installer/satellite.log` to preview the changes that are applied during the upgrade. Locate the **+++** and **---** symbols that indicate the changes to the configurations files. Although entering the **satellite-installer** command with the **--noop** option does not apply any changes to your Satellite, some Puppet resources in the module expect changes to be applied and might display failure messages.

- e. Stop Satellite services:

```
# satellite-maintain service stop
```

18. Because of the lengthy upgrade time, use a utility such as **tmux** to suspend and reattach a communication session. You can then check the upgrade progress without staying connected to the command shell continuously.

If you lose connection to the command shell where the upgrade command is running you can see the logs in `/var/log/foreman-installer/satellite.log` to check if the process completed successfully.

19. Check the available versions to confirm the version you want is listed:

```
# satellite-maintain upgrade list-versions
```

20. Use the health check option to determine if the system is ready for upgrade. When prompted, enter the hammer admin user credentials to configure **satellite-maintain** with hammer credentials. These changes are applied to the `/etc/foreman-maintain/foreman-maintain-hammer.yml` file.

```
# satellite-maintain upgrade check --target-version 6.11 \
--whitelist="repositories-validate,repositories-setup"
```

Review the results and address any highlighted error conditions before performing the upgrade.

21. Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.11 \
--whitelist="repositories-validate,repositories-setup"
```

If the script fails due to missing or outdated packages, you must download and install these separately. For more information, see [Resolving Package Dependency Errors](#) in *Installing Satellite Server in a Disconnected Network Environment*.



22. If using a BASH shell, after a successful or failed upgrade, enter:

```
# hash -d satellite-maintain service 2> /dev/null
```

23. Check when the kernel packages were last updated:

```
# rpm -qa --last | grep kernel
```

24. Optional: If a kernel update occurred since the last reboot, stop Satellite services and reboot the system:

```
# satellite-maintain service stop
# reboot
```

25. Optional: If you made manual edits to DNS or DHCP configuration files, check and restore any changes required to the DNS and DHCP configuration files using the backups that you made.

26. If you make changes in the previous step, restart Satellite services:

```
# satellite-maintain service restart
```

27. If you have the OpenSCAP plug-in installed, but do not have the default OpenSCAP content available, enter the following command.

```
# foreman-rake foreman_openscap:bulk_upload:default
```

28. In the Satellite web UI, go to **Configure** > **Discovery Rules** and associate selected organizations and locations with discovery rules.

## 3.2. SYNCHRONIZING THE NEW REPOSITORIES

You must enable and synchronize the new 6.11 repositories before you can upgrade Capsule Servers and Satellite clients.

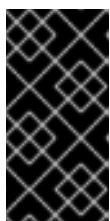
### Procedure

1. In the Satellite web UI, navigate to **Content** > **Red Hat Repositories**.
2. Toggle the **Recommended Repositories** switch to the **On** position.
3. From the list of results, expand the following repositories and click the **Enable** icon to enable the repositories:
  - To upgrade Satellite clients, enable the **Red Hat Satellite Client 6** repositories for all Red Hat Enterprise Linux versions that clients use.
  - If you have Capsule Servers, to upgrade them, enable the following repositories too:
    - Red Hat Satellite Capsule 6.11 (for RHEL 7 Server) (RPMs)**
    - Red Hat Satellite Maintenance 6.11 (for RHEL 7 Server) (RPMs)**
    - Red Hat Ansible Engine 2.9 RPMs for Red Hat Enterprise Linux 7 Server**
    - Red Hat Software Collections RPMs for Red Hat Enterprise Linux 7 Server**

**NOTE**

If the 6.11 repositories are not available, refresh the Red Hat Subscription Manifest. In the Satellite web UI, navigate to **Content** > **Subscriptions**, click **Manage Manifest**, then click **Refresh**.

4. In the Satellite web UI, navigate to **Content** > **Sync Status**.
5. Click the arrow next to the product to view the available repositories.
6. Select the repositories for 6.11. Note that **Red Hat Satellite Client 6** does not have a 6.11 version. Choose **Red Hat Satellite Client 6** instead.
7. Click **Synchronize Now**.

**IMPORTANT**

If an error occurs when you try to synchronize a repository, refresh the manifest. If the problem persists, raise a support request. Do not delete the manifest from the Customer Portal or in the Satellite web UI; this removes all the entitlements of your content hosts.

8. If you use Content Views to control updates to the base operating system of Capsule Server, update those Content Views with new repositories, publish, and promote their updated versions. For more information, see [Managing Content Views](#) in the *Content Management Guide*.

### 3.3. UPGRADING CAPSULE SERVERS

This section describes how to upgrade Capsule Servers from 6.10 to 6.11.

#### Before You Begin

- You must upgrade Satellite Server before you can upgrade any Capsule Servers. Note that you can upgrade Capsules separately from Satellite. For more information, see [Section 1.4, "Upgrading Capsules Separately from Satellite"](#).
- Ensure the Red Hat Satellite Capsule 6.11 repository is enabled in Satellite Server and synchronized.
- Ensure that you synchronize the required repositories on Satellite Server. For more information, see [Section 3.2, "Synchronizing the New Repositories"](#).
- If you use Content Views to control updates to the base operating system of Capsule Server, update those Content Views with new repositories, publish, and promote their updated versions. For more information, see [Managing Content Views](#) in the *Content Management Guide*.
- Ensure the Capsule's base system is registered to the newly upgraded Satellite Server.
- Ensure the Capsule has the correct organization and location settings in the newly upgraded Satellite Server.
- Review and update your firewall configuration prior to upgrading your Capsule Server. For more information, see [Preparing Your Environment for Capsule Installation](#) in *Installing Capsule Server*.



## WARNING

If you implemented custom certificates, you must retain the content of both the **/root/ssl-build** directory and the directory in which you created any source files associated with your custom certificates.

Failure to retain these files during an upgrade causes the upgrade to fail. If these files have been deleted, they must be restored from a backup in order for the upgrade to proceed.

## Upgrading Capsule Servers

1. Create a backup.
  - On a virtual machine, take a snapshot.
  - On a physical machine, create a backup.  
For information on backups, see [Backing Up Satellite Server and Capsule Server](#) in the *Administering Red Hat Satellite 6.10* guide.
2. Regenerate certificates on your Satellite Server:

- a. Regenerate certificates for Capsules that use default certificates:

- i. For Capsule Servers that do not use load balancing:

```
# capsule-certs-generate --foreman-proxy-fqdn "_capsule.example.com_" \
--certs-update-all \
--certs-tar "~/_capsule.example.com-certs.tar_"
```

- ii. For Capsule Servers that are load-balanced:

```
# capsule-certs-generate --foreman-proxy-fqdn "_capsule.example.com_" \
--certs-update-all \
--foreman-proxy-cname "_load-balancer.example.com_" \
--certs-tar "~/_capsule.example.com-certs.tar_"
```

- b. Regenerate certificates for Capsules that use custom certificates:

- i. For Capsule Servers that do not use load balancing:

```
# capsule-certs-generate --foreman-proxy-fqdn "_capsule.example.com_" \
--certs-tar "~/_capsule.example.com-certs.tar_" \
--server-cert "/root/capsule_cert/_capsule_cert.pem_" \
--server-key "/root/capsule_cert/_capsule_cert_key.pem_" \
--server-ca-cert "/root/capsule_cert/_ca_cert_bundle.pem_" \
--certs-update-server
```

- ii. For Capsule Servers that are load-balanced:

```
# capsule-certs-generate --foreman-proxy-fqdn "_capsule.example.com_" \
```

```
--certs-tar "~/_capsule.example.com-certs.tar" \
--server-cert "/root/capsule_cert/_capsule_cert.pem" \
--server-key "/root/capsule_cert/_capsule_cert_key.pem" \
--server-ca-cert "/root/capsule_cert/_ca_cert_bundle.pem" \
--foreman-proxy-cname "_load-balancer.example.com" \
--certs-update-server
```

For more information on custom SSL certificates signed by a Certificate Authority, see [Deploying a Custom SSL Certificate to Capsule Server](#) in *Installing Capsule Server*.

- Copy the resulting tarball to your Capsule. The location must match what the installer expects. Use `grep tar_file /etc/foreman-installer/scenarios.d/capsule-answers.yaml` on your Capsule to determine this.

- Clean yum cache:

```
# yum clean metadata
```

- Ensure Capsule has access to **rhel-7-server-satellite-maintenance-6.11-rpms** and update `satellite-maintain`.

```
# subscription-manager repos --enable rhel-7-server-satellite-maintenance-6.11-rpms
# yum --disableplugin=foreman-protector update rubygem-foreman_maintain satellite-maintain
```

- On Capsule Server, verify that the **foreman\_url** setting points to the Satellite FQDN:

```
# grep foreman_url /etc/foreman-proxy/settings.yml
```

- Check the available versions to confirm the version you want is listed:

```
# satellite-maintain upgrade list-versions
```

- Because of the lengthy upgrade time, use a utility such as **tmux** to suspend and reattach a communication session. You can then check the upgrade progress without staying connected to the command shell continuously.

If you lose connection to the command shell where the upgrade command is running, you can see the logged messages in the `/var/log/foreman-installer/capsule.log` file to check if the process completed successfully.

- Use the health check option to determine if the system is ready for upgrade:

```
# satellite-maintain upgrade check --target-version 6.11
```

Review the results and address any highlighted error conditions before performing the upgrade.

- Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.11
```

- Check when the kernel packages were last updated:

```
# rpm -qa --last | grep kernel
```

12. Optional: If a kernel update occurred since the last reboot, reboot the system:

```
# reboot
```

13. Optional: If you made manual edits to DNS or DHCP configuration files, check and restore any changes required to the DNS and DHCP configuration files using the backups made earlier.

14. Optional: If you use custom repositories, ensure that you enable these custom repositories after the upgrade completes.

### 3.4. UPGRADING CONTENT HOSTS

The Satellite Client 6 repository provides **katello-agent** and **katello-host-tools**, which provide communication services for managing Errata.



#### NOTE

The Katello agent is deprecated and will be removed in a future Satellite version. Migrate your workloads to use the remote execution feature to update clients remotely. For more information, see [Migrating from Katello Agent to Remote Execution](#) in the *Managing Hosts Guide*.

For deployments using **katello-agent** and **goferd**, update all clients to the new version of **katello-agent**. For deployments not using **katello-agent** and **goferd**, update all clients to the new version of **katello-host-tools**. Complete this action as soon as possible so that your clients are fully compatible with Satellite Server.

#### Prerequisites

- You must have upgraded Satellite Server.
- You must have enabled the new Satellite Client 6 repositories on the Satellite.
- You must have synchronized the new repositories in the Satellite.
- If you have not previously installed **katello-agent** on your clients and you want to install it, use the manual method. For more information, see [CLI Procedure](#).



#### WARNING

If you implemented custom certificates, you must retain the content of both the **/root/ssl-build** directory and the directory in which you created any source files associated with your custom certificates.

Failure to retain these files during an upgrade causes the upgrade to fail. If these files have been deleted, they must be restored from a backup in order for the upgrade to proceed.

#### Procedure

1. In the Satellite web UI, navigate to **Hosts > Content Hosts** and select the Content Hosts that you want to upgrade.
2. From the **Select Action** list, select **Manage Repository Sets**
3. From the **Repository Sets Management** list, select the **Red Hat Satellite Tools 6.10** checkbox.
4. From the **Select Action** list, select **Override to Disabled**, and click **Done**.
5. When the process completes, on the same set of hosts from the previous steps, from the **Select Action** list, select **Manage Repository Sets**
6. From the **Repository Sets Management** list, select the **Red Hat Satellite Client 6** checkbox.
7. From the **Select Action** list, select **Override to Enabled**, and click **Done**.
8. When the process completes, on the same set of hosts from the previous steps, from the **Select Action** list, select **Manage Packages**.
9. In the **Package** search field, enter one of the following options depending on your configuration:
  - If your deployment uses **katello-agent** and **goferd**, enter **katello-agent**.
  - If your deployment does not use **katello-agent** and **goferd**, enter **katello-host-tools**.
10. From the **Update** list, you must select the **via remote execution** option. This is required because if you update the package using the Katello agent, the package update disrupts the communication between the client and Satellite or Capsule Server, which causes the update to fail. For more information, see [Configuring and Setting Up Remote Jobs](#) in the *Managing Hosts* guide.

## CLI Procedure

1. Log into the client system.
2. Disable the repositories for the previous version of Satellite.

```
# subscription-manager repos \
--disable=rhel-7-server-satellite-tools-6.10-rpms
```

3. Enable the Satellite Client 6 repository for this version of Satellite.

```
# subscription-manager repos \
--enable=rhel-7-server-satellite-client-6-rpms
```

4. Depending on your configuration, complete one of the following steps:
  - If your deployment uses **katello-agent** and **goferd**, enter the following command to install or upgrade **katello-agent**:

```
# yum install katello-agent
```

- If your deployment does not use **katello-agent** and **goferd**, enter the following command to install or upgrade **katello-host-tools**:

```
# yum install katello-host-tools
```

## 3.5. UPGRADING THE EXTERNAL DATABASE

You can upgrade an external database from Red Hat Enterprise Linux 7 to Red Hat Enterprise Linux 8 while upgrading Satellite from 6.10 to 6.11.

### Prerequisites

- Create a new Red Hat Enterprise Linux 8 based host for PostgreSQL server that follows the external database on Red Hat Enterprise Linux 8 documentation. For more information, see [Using External Databases with Satellite](#) .

### Procedure

1. Create a backup.
2. Restore the backup on the new server.
3. If Satellite reaches the new database server via the old name, no further changes are required. Otherwise reconfigure Satellite to use the new name:

```
# satellite-installer \
--foreman-db-host newpostgres.example.com \
--katello-candlepin-db-host newpostgres.example.com \
--foreman-proxy-content-pulpcore-postgresql-host newpostgres.example.com
```

## 3.6. PERFORMING POST-UPGRADE TASKS

Some of the procedures in this section are optional. You can choose to perform only those procedures that are relevant to your installation.

### 3.6.1. Upgrading Discovery

If you use the PXE-based discovery process, then you must complete the discovery upgrade procedure on Satellite and on any Capsule Server with hosts that you want to be listed in Satellite on the **Hosts > Discovered hosts** page.

This section describes updating the PXELinux template and the boot image passed to hosts that use PXE booting to register themselves with Satellite Server.

From Satellite 6.11, provisioning templates now have a separate association with a subnet, and do not default to using the TFTP Capsule for that subnet. If you create subnets after the upgrade, you must specifically enable the Satellite or a Capsule to provide a proxy service for discovery templates and then configure all subnets with discovered hosts to use a specific *template Capsule*.

During the upgrade, for every subnet with a TFTP proxy enabled, the template Capsule is set to be the same as the TFTP Capsule. After the upgrade, check all subnets to verify this was set correctly.

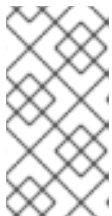
These procedures are not required if you do not use PXE booting of hosts to enable Satellite to discover new hosts.

### Additional resources

For information about configuring the Discovery service, see [Configuring the Discovery Service in Provisioning Hosts](#).

### 3.6.1.1. Upgrading Discovery on Satellite Server

1. Update the Discovery template in the Satellite web UI:
  - a. In the Satellite web UI, navigate to **Hosts > Provisioning templates**.
  - b. On the **PXELinux global default** line, click **Clone**.
  - c. Enter a new name for the template in the **Name** field, for example **ACME PXE global default**.
  - d. In the template editor field, change the line **ONTIMEOUT local** to **ONTIMEOUT discovery** and click **Submit**.
  - e. In the Satellite web UI, navigate to **Administer > Settings**.
  - f. On the **Provisioning** tab, set **Default PXE global template entry** to a custom value for your environment.
  - g. Locate **Global default PXELinux template** and click on its **Value**.
  - h. Select the name of the newly created template from the menu and click **Submit**.
  - i. In the Satellite web UI, navigate to **Hosts > Provisioning templates**.
  - j. Click **Build PXE Default**, then click **OK**.



#### NOTE

If the template is modified, a Satellite upgrade overrides it to its default version. Once the PXE Default configuration is built, the template configured in the **Settings** is deployed to the TFTP. This can result in deploying the default template if the new template is correctly set in the **Settings**.

2. In the Satellite web UI, go to **Configure > Discovery Rules** and associate selected organizations and locations with discovery rules.

### 3.6.2. Upgrading Discovery on Capsule Servers

1. Verify that the Foreman Discovery package is current on Satellite Server.

```
# satellite-maintain packages install tfm-rubygem-foreman_discovery
```

2. If an update occurred in the previous step, restart the **satellite-maintain** services.

```
# satellite-maintain service restart
```

3. Upgrade the Discovery image on the Satellite Capsule that is either connected to the provisioning network with discovered hosts or provides TFTP services for discovered hosts.

```
# satellite-maintain packages install foreman-discovery-image
```



4. On the same instance, install the package which provides the Proxy service, and then restart **foreman-proxy** service.

```
# satellite-maintain packages install tfm-rubygem-smart_proxy_discovery
# service foreman-proxy restart
```

5. In the Satellite web UI, go to **Infrastructure** > **Capsules** and verify that the relevant Capsule lists **Discovery** in the features column. Select **Refresh** from the **Actions** drop-down menu if necessary.
6. Go to **Infrastructure** > **Subnets** and for each subnet on which you want to use discovery:
  - a. Click the subnet name.
  - b. On the **Capsules** tab, ensure the **Discovery Capsule** is set to a Capsule you configured above.

### 3.6.2.1. Verifying Subnets have a Template Capsule

If the Templates feature is enabled in your environment, ensure all subnets with discovered hosts have a template Capsule:

1. In the Satellite web UI, navigate to **Infrastructure** > **Subnets**.
2. Select the subnet you want to check.
3. On the **Capsules** tab, ensure a **Template Capsule** has been set for this subnet.

For more information about configuring subnets with template Capsules, see [Configuring the Discovery Service](#) in the *Provisioning* guide.

### 3.6.3. Upgrading virt-who

If virt-who is installed on Satellite Server or a Capsule Server, it will be upgraded when they are upgraded. No further action is required. If virt-who is installed elsewhere, it must be upgraded manually.

#### Before You Begin

If virt-who is installed on a host registered to Satellite Server or a Capsule Server, first upgrade the host to the latest packages available in the Satellite Client 6 repository. For information about upgrading hosts, see [Section 3.4, "Upgrading Content Hosts"](#).

#### Upgrade virt-who Manually

1. Upgrade virt-who.

```
# yum upgrade virt-who
```

2. Restart the virt-who service so the new version is activated.

```
# systemctl restart virt-who.service
```

### 3.6.4. Removing the Previous Version of the Satellite Tools Repository

After completing the upgrade to Satellite 6.11, the Red Hat Satellite Tools 6.10 repository can be removed from Content Views and then disabled.

Disable Version 6.10 of the Satellite Tools Repository:

1. In the Satellite web UI, navigate to **Content > Red Hat Repositories**.
2. In the **Enabled Repositories** area, locate **Red Hat Satellite Tools 6.10 for RHEL 7 Server RPMs x86\_64**.
3. Click the **Disable** icon to the right.

If the repository is still contained in a Content View then you cannot disable it. Packages from a disabled repository are removed automatically by a scheduled task.

### 3.6.5. Migrating Ansible Content

The upgrade from Red Hat Enterprise Linux 7 to Red Hat Enterprise Linux 8 includes an upgrade from Ansible Engine 2.9 to Ansible Core 2.12.

If you have custom Ansible content such as playbooks, job templates inside REX, roles and collections on disk, and you rely on modules being delivered by the Ansible RPM on Satellite, you have to take additional steps to adapt your Ansible installation or migrate your Ansible content.

Ansible Core contains only essential modules. In terms of FQCN notation **namespace.collection.module**, you can continue to use **ansible.builtin.\***, but everything else is missing in Ansible Core. That means you will be no longer able to use non-builtin Ansible modules as you were used to and you have to get them from another source, eventually.

You have the following options to handle your Ansible content after the upgrade:

- You can obtain additional community-maintained collections that provide the non-essential functionality from Ansible Galaxy. For more information, see [Installing collections](#) in the *Galaxy User Guide*.  
Note that Red Hat does not provide support for this content.
- If you have a subscription for [Red Hat Automation Hub](#), you can configure your **ansible-galaxy** to talk to Automation Hub server and download content from there. That content is supported by Red Hat. For more information on configuring Automation Hub connection for **ansible-galaxy**, see [Configuring Red Hat automation hub as the primary source for content](#).
- You can rewrite your Ansible roles, templates and other affected content. Note that Red Hat does not provide support for content that you maintain yourself.



#### NOTE

If you want to download and install Ansible content on Capsule that does not have a connection to an external Ansible Galaxy server, then you must pass the content through Satellite Server instead of using the URL of the Ansible Galaxy server in the configuration on the Capsule directly:

1. Sync the content from a Ansible Galaxy server to a custom repository on your Satellite Server.
2. Configure Ansible on your Capsule to download the content from Satellite Server.

## Additional resources

- [Updates to using Ansible in RHEL 8.6 and 9.0](#)
- [Using Ansible in RHEL 8.6 and later](#)
- [Release Notes for Red Hat Enterprise Linux 8.6](#)

### 3.6.6. Reclaiming PostgreSQL Space

The PostgreSQL database can use a large amount of disk space especially in heavily loaded deployments. Use this procedure to reclaim some of this disk space on Satellite.

#### Procedure

1. Stop all services, except for the **postgresql** service:

```
# satellite-maintain service stop --exclude postgresql
```

2. Switch to the **postgres** user and reclaim space on the database:

```
# su - postgres -c 'vacuumdb --full --all'
```

3. Start the other services when the vacuum completes:

```
# satellite-maintain service start
```

### 3.6.7. Updating Templates, Parameters, Lookup Keys and Values

During the upgrade process, Satellite attempts to locate macros that are deprecated for Satellite 6.11 and converts old syntax to new syntax for the default Satellite templates, parameters, and lookup keys and values. However, Satellite does not convert old syntax in cloned templates and in custom job or provisioning templates that you have created.

The process uses simple text replacement, for example:

```
@host.params['parameter1'] -> host_param('parameter1')
@host.param_true?('parameter1') -> host_param_true?('parameter1')
@host.param_false?('parameter1') -> host_param_false?('parameter1')
@host.info['parameters'] -> host_enc['parameters']
```



#### WARNING

If you use cloned templates in Satellite, verify whether the cloned templates have diverged from the latest version of the original templates in Satellite. The syntax for the same template can differ between versions of Satellite. If your cloned templates contain outdated syntax, update the syntax to match the latest version of the template.

To ensure that this text replacement does not break or omit any variables in your files during the upgrade, check all templates, parameters, and lookup keys and values for the old syntax and replace manually.

The following error occurs because of old syntax remaining in files after the upgrade:

```
undefined method '#params' for Host::Managed::Jail
```

### Fixing the outdated `subscription_manager_registration` snippet

Satellite 6.4 onwards uses the `redhat_register` snippet instead of the `subscription_manager_registration` snippet.

If you upgrade from Satellite 6.3 and earlier, you must replace the `subscription_manager_registration` snippet in your custom job or provisioning templates as follows:

```
<%= snippet "subscription_manager_registration" %>
      ↓
<%= snippet 'redhat_register' %>
```

### 3.6.8. Tuning Satellite Server with Predefined Profiles

If your Satellite deployment includes more than 5000 hosts, you can use predefined tuning profiles to improve performance of Satellite.

Note that you cannot use tuning profiles on Capsules.

You can choose one of the profiles depending on the number of hosts your Satellite manages and available hardware resources.

The tuning profiles are available in the `/usr/share/foreman-installer/config/foreman.hiera/tuning/sizes` directory.

When you run the `satellite-installer` command with the `--tuning` option, deployment configuration settings are applied to Satellite in the following order:

1. The default tuning profile defined in the `/usr/share/foreman-installer/config/foreman.hiera/tuning/common.yaml` file
2. The tuning profile that you want to apply to your deployment and is defined in the `/usr/share/foreman-installer/config/foreman.hiera/tuning/sizes/` directory
3. Optional: If you have configured a `/etc/foreman-installer/custom-hiera.yaml` file, Satellite applies these configuration settings.

Note that the configuration settings that are defined in the `/etc/foreman-installer/custom-hiera.yaml` file override the configuration settings that are defined in the tuning profiles.

Therefore, before applying a tuning profile, you must compare the configuration settings that are defined in the default tuning profile in `/usr/share/foreman-installer/config/foreman.hiera/tuning/common.yaml`, the tuning profile that you want to apply and your `/etc/foreman-installer/custom-hiera.yaml` file, and remove any duplicated configuration from the `/etc/foreman-installer/custom-hiera.yaml` file.

default

Number of managed hosts: 0 – 5000

RAM: 20G

Number of CPU cores: 4

### medium

Number of managed hosts: 5001 – 10000

RAM: 32G

Number of CPU cores: 8

### large

Number of managed hosts: 10001 – 20000

RAM: 64G

Number of CPU cores: 16

### extra-large

Number of managed hosts: 20001 – 60000

RAM: 128G

Number of CPU cores: 32

### extra-extra-large

Number of managed hosts: 60000+

RAM: 256G

Number of CPU cores: 48+

## Procedure

1. Optional: If you have configured the **custom-hiera.yaml** file on Satellite Server, back up the **/etc/foreman-installer/custom-hiera.yaml** file to **custom-hiera.original**. You can use the backup file to restore the **/etc/foreman-installer/custom-hiera.yaml** file to its original state if it becomes corrupted:

```
# cp /etc/foreman-installer/custom-hiera.yaml \  
/etc/foreman-installer/custom-hiera.original
```

2. Optional: If you have configured the **custom-hiera.yaml** file on Satellite Server, review the definitions of the default tuning profile in **/usr/share/foreman-installer/config/foreman.hiera/tuning/common.yaml** and the tuning profile that you want to apply in **/usr/share/foreman-installer/config/foreman.hiera/tuning/sizes/**. Compare the configuration entries against the entries in your **/etc/foreman-installer/custom-hiera.yaml** file and remove any duplicated configuration settings in your **/etc/foreman-installer/custom-hiera.yaml** file.
3. Enter the **satellite-installer** command with the **--tuning** option for the profile that you want to apply. For example, to apply the medium tuning profile settings, enter the following command:

```
# satellite-installer --tuning medium
```

## CHAPTER 4. UPGRADING SATELLITE OR CAPSULE TO RED HAT ENTERPRISE LINUX 8 IN-PLACE USING LEAPP

Use this procedure to upgrade your Satellite or Capsule installation from Red Hat Enterprise Linux 7 to Red Hat Enterprise Linux 8.

### Prerequisites

- Satellite 6.11 or Capsule 6.11 running on Red Hat Enterprise Linux 7.
- Review Known Issues before you begin an upgrade. For more information, see [Known Issues in Red Hat Satellite 6.11](#).
- If you previously upgraded Satellite or Capsule from an earlier version, and the `/var/lib/pgsql` contained the PostgreSQL database content before the migration from PostgreSQL 9 to PostgreSQL 12 from the SCL, empty `/var/lib/pgsql` before proceeding.
- During the upgrade, the PostgreSQL data is moved from `/var/opt/rh/rh-postgresql12/lib/pgsql/data/` to `/var/lib/pgsql/data/`. If these two paths reside on the same partition, no further action is required. If they reside on different partitions, ensure that there is enough space for the data to be copied over. You can move the PostgreSQL data on your own and the upgrade will skip this step if `/var/opt/rh/rh-postgresql12/lib/pgsql/data/` does not exist.

### Prerequisites for Disconnected Environment

If you run Satellite in a disconnected environment, ensure it also meets the following prerequisites:

- You must obtain and deploy Leapp metadata manually. For more information, see [Leapp utility metadata in-place upgrades of RHEL for disconnected upgrades](#).
- You require access to Red Hat Enterprise Linux and Satellite packages. Obtain the ISO files for Red Hat Enterprise Linux 8 and Satellite. For more information, see [Section 3.1.2, “Upgrading a Disconnected Satellite Server”](#).
- For more information on customizing the Leapp upgrade for your environment, see [Customizing your Red Hat Enterprise Linux in-place upgrade](#).
- Since Leapp completes part of the upgrade in a container that has no access to additional ISO mounts, the repositories cannot be served from a locally mounted ISO but must be delivered over the network from a different machine.
- For more information, see [How to in-place upgrade an offline / disconnected RHEL 7 machine to RHEL 8 with Leapp?](#)



### NOTE

- Satellite supports DEFAULT and FIPS crypto-policies. The FUTURE crypto-policy is not supported for Satellite and Capsule installations.
- In-place upgrade of Red Hat Enterprise Linux systems in FIPS mode is not supported by Red Hat. Turning FIPS off, upgrading from Red Hat Enterprise Linux 7 to Red Hat Enterprise Linux 8, and then turning FIPS on is not supported either. Instead, migrate your Satellite 6.11 to a freshly installed Red Hat Enterprise Linux 8 system with FIPS mode enabled. For more information, see [Chapter 5, Migrating Satellite to a New Red Hat Enterprise Linux System](#).

## Procedure

1. Configure the repositories to obtain Leapp.  
On Red Hat Enterprise Linux, enable the **rhel-7-server-extras-rpms** repository:

```
# subscription-manager repos --enable=rhel-7-server-extras-rpms
```

2. Install required packages:

```
# satellite-maintain packages install leapp leapp-repository
```

3. For Leapp to perform the upgrade in a disconnected environment, download the metadata and manually extract, as described in [Leapp utility metadata in-place upgrades of RHEL for disconnected upgrades](#).
4. Set up the following repositories to perform the upgrade in a disconnected environment:

- a. **/etc/yum.repos.d/rhel8.repo:**

```
[BaseOS]
name=rhel-8-for-x86_64-baseos-rpms
baseurl=http://server.example.com/rhel8/BaseOS/

[AppStream]
name=rhel-8-for-x86_64-appstream-rpms
baseurl=http://server.example.com/rhel8/AppStream/
```

- b. **/etc/yum.repos.d/satellite.repo:**

```
[satellite-6.11-for-rhel-8-x86_64-rpms]
name=satellite-6.11-for-rhel-8-x86_64-rpms
baseurl=http://server.example.com/sat6/Satellite/

[satellite-maintenance-6.11-for-rhel-8-x86_64-rpms]
name=satellite-maintenance-6.11-for-rhel-8-x86_64-rpms
baseurl=http://server.example.com/sat6/Maintenance/
```

5. Configure Leapp to skip updating the Tomcat packages to ensure the upgrade does not fail:

```
# echo tomcat >> /etc/leapp/transaction/to_remove
# echo tomcat-lib >> /etc/leapp/transaction/to_remove
```

6. Let Leapp analyze your system:

```
# leapp preupgrade
```

If you run Satellite in a disconnected environment, add the **--no-rhsm** and **--enablerepo** parameters:

```
# leapp preupgrade \
--no-rhsm \
--enablerepo BaseOS \
```

```
--enablerepo AppStream \
--enablerepo satellite-6.11-for-rhel-8-x86_64-rpms \
--enablerepo satellite-maintenance-6.11-for-rhel-8-x86_64-rpms
```

The first run is expected to fail but report issues and inhibit the upgrade. Examine the report in the `/var/log/leapp/leapp-report.txt` file, answer all questions (using **leapp answer**), and manually resolve the other reported problems.

The following commands show the most common steps required:

```
# rmmod pata_acpi
# echo PermitRootLogin yes | tee -a /etc/ssh/sshd_config
# leapp answer --section remove_pam_pkcs11_module_check.confirm=True
```

If **leapp preupgrade** inhibits the upgrade with **Unsupported network configuration** because there are multiple legacy named network interfaces, follow the instructions shown by Leapp to rename the interfaces, followed by an installer run to reconfigure Satellite or Capsule to use the new interface names:

```
# satellite-installer --help |grep 'interface.*eth'
--foreman-proxy-dhcp-interface DHCP listen interface (current: "eth0")
--foreman-proxy-dns-interface DNS interface (current: "eth0")
```

If **eth0** was renamed to **em0**, call the installer to use the new interface name with:

```
# satellite-installer --foreman-proxy-dhcp-interface=em0 --foreman-proxy-dns-interface=em0
```

7. Ensure **leapp preupgrade** has no issues.

8. Run:

```
# leapp upgrade
```

If you run Satellite in a disconnected environment, add the **--no-rhsm** and **--enablerepo** parameters:

```
# leapp upgrade \
--no-rhsm \
--enablerepo BaseOS \
--enablerepo AppStream \
--enablerepo satellite-6.11-for-rhel-8-x86_64-rpms \
--enablerepo satellite-maintenance-6.11-for-rhel-8-x86_64-rpms
```

9. Reboot the system.

After the system reboots, a live system conducts the upgrade, reboots to fix SELinux labels, then reboots into the final Red Hat Enterprise Linux 8 system.

10. Leapp finishes the upgrade, watch it with:

```
# journalctl -u leapp_resume -f
```

11. Complete these procedures in *Upgrading from RHEL 7 to RHEL 8*:

a. Unlock packages:



```
# satellite-maintain packages unlock
```

- b. [Verifying the post-upgrade state of the RHEL 8 system](#)
- c. [Performing post-upgrade tasks](#)
- d. Lock packages:

```
# satellite-maintain packages lock
```

12. For Satellite only and not Capsule, if you require SELinux to be in enforcing mode, run the following command before changing SELinux to enforcing mode:

```
# dnf reinstall foreman-selinux katello-selinux --disableplugin=foreman-protector
```

13. Complete the steps for changing SELinux to enforcing mode described in [Changing SELinux mode to enforcing](#) in the *Upgrading from RHEL 7 to RHEL 8* guide.
14. Unset the **subscription-manager** release:

```
# subscription-manager release --unset
```

## CHAPTER 5. MIGRATING SATELLITE TO A NEW RED HAT ENTERPRISE LINUX SYSTEM

When you migrate your Satellite, you create a backup of your Satellite Server and your Capsule, install a fresh instance, and restore your backup on the new instance. After your migration is complete, you can then decommission the earlier instance of Satellite Server and Capsule.

### Terminology

Ensure that you understand the following terms:

#### Source server

The origin of migration on which you create a backup.

#### Target server

The new server on which you restore the backup.

### High-Level Procedure

To migrate your Satellite to new hardware, follow these high-level steps:

1. Create a backup of the Satellite Server or Capsule Server on the source server.
2. Perform a fresh installation of the Satellite Server or Capsule Server on a target server.
  - Install a minimal Red Hat Enterprise Linux 8 instance with the capacity to store backup files.
  - Do not install any operating system software groups or third-party applications.  
For more information, see [Performing a standard Red Hat Enterprise Linux installation](#) .
3. Restore the backup on the target server.

## 5.1. CREATING A BACKUP OF A SERVER ON RED HAT ENTERPRISE LINUX 7

Before you perform a fresh installation of the Satellite Server or Capsule Server on the Red Hat Enterprise Linux 8 system, back up your Satellite Server or Capsule Server data on the Red Hat Enterprise Linux 7 system by creating an offline backup.

If you recently created an offline backup, you can perform an incremental backup to update the existing backup.

### Procedure

- Perform a backup on the source server:
  - To perform a full backup, see [Backing Up Satellite Server and Capsule Server](#) in *Administering Red Hat Satellite*.
  - To perform an incremental backup, see [Performing an Incremental Backup](#) in *Administering Red Hat Satellite*.

## 5.2. PERFORMING A FRESH INSTALLATION OF A SERVER ON RED HAT ENTERPRISE LINUX 8

After you have created a backup of the Satellite Server or Capsule Server on the source server, you can install Satellite Server or Capsule Server on the target server.

- To install connected Satellite Server, see [Installing Satellite Server in a Connected Network Environment](#).
- To install disconnected Satellite Server, see [Installing Satellite Server in a Disconnected Network Environment](#).
- To install Capsule Server, see [Installing Capsule Server](#).

## 5.3. RESTORING A BACKUP OF A SERVER ON RED HAT ENTERPRISE LINUX 8

After you perform a fresh installation of Satellite Server or Capsule Server on the target server, you can restore the backup you previously created.

### Procedure

- Restore a backup on the target server:
  - To restore a full backup, see [Restoring From a Full Backup](#) in *Administering Red Hat Satellite*.
  - To restore an incremental backup, see [Restoring From Incremental Backups](#) in *Administering Red Hat Satellite*.
- Reindex the databases:

```
# runuser -u postgres -- reindexdb -a
```

## CHAPTER 6. UPDATING SATELLITE SERVER AND CAPSULE SERVER

Use this chapter to update your existing Satellite Server and Capsule Server to a new patch version, for example, from 6.11.0 to 6.11.1.

Updates patch security vulnerabilities and minor issues discovered after code is released, and are often fast and non-disruptive to your operating environment.

Before updating, back up your Satellite Server and all Capsule Servers. For more information, see [Backing Up Satellite Server and Capsule Server](#) in the *Administering Red Hat Satellite* guide.

### 6.1. UPDATING SATELLITE SERVER

#### Prerequisites

- Ensure that you have synchronized Satellite Server repositories for Satellite, Capsule, and Satellite Client 6.
- Ensure each external Capsule and Content Host can be updated by promoting the updated repositories to all relevant Content Views.



#### WARNING

If you customize configuration files, manually or use a tool such as Hiera, these customizations are overwritten when the installation script runs during upgrading or updating. You can use the **--noop** option with the `satellite-installer` script to test for changes. For more information, see the Red Hat Knowledgebase solution [How to use the noop option to check for changes in Satellite config files during an upgrade](#).

#### Updating Satellite Server to the Next Minor Version

##### To Update Satellite Server:

1. Ensure the Satellite Maintenance repository is enabled:

- For Red Hat Enterprise Linux 8:

```
# subscription-manager repos --enable \  
satellite-maintenance-6.11-for-rhel-8-x86_64-rpms
```

- For Red Hat Enterprise Linux 7:

```
# subscription-manager repos --enable \  
rhel-7-server-satellite-maintenance-6.11-rpms
```

2. Check the available versions to confirm the next minor version is listed:

```
# satellite-maintain upgrade list-versions
```

- Use the health check option to determine if the system is ready to upgrade. On first use of this command, **satellite-maintain** prompts you to enter the hammer admin user credentials and saves them in the `/etc/foreman-maintain/foreman-maintain-hammer.yml` file.

```
# satellite-maintain upgrade check --target-version 6.11.z
```

Review the results and address any highlighted error conditions before performing the upgrade.

- Because of the lengthy update time, use a utility such as **tmux** to suspend and reattach a communication session. You can then check the upgrade progress without staying connected to the command shell continuously.

If you lose connection to the command shell where the upgrade command is running, you can see the logged messages in the `/var/log/foreman-installer/satellite.log` file to check if the process was completed successfully.

- Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.11.z
```

- Check when the kernel packages were last updated:

```
# rpm -qa --last | grep kernel
```

- Optional: If a kernel update occurred since the last reboot, stop Satellite services and reboot the system:

```
# satellite-maintain service stop
# reboot
```

## 6.2. UPDATING DISCONNECTED SATELLITE SERVER

This section describes the steps needed to update in an Air-gapped Disconnected setup where the connected Satellite Server (which synchronizes content from CDN) is air gapped from a disconnected Satellite Server.

### 6.2.1. Updating Disconnected Satellite Server on Red Hat Enterprise Linux 8

Complete the following steps on the connected Satellite Server for Red Hat Enterprise Linux 8.

- Ensure that you have synchronized the following repositories in your connected Satellite Server.

```
rhel-8-for-x86_64-baseos-rpms
rhel-8-for-x86_64-appstream-rpms
satellite-6.11-for-rhel-8-x86_64-rpms
satellite-maintenance-6.11-for-rhel-8-x86_64-rpms
```

- Download the debug certificate of the organization and store it locally at, for example, `/etc/pki/katello/certs/org-debug-cert.pem` or a location of your choosing. For more information, see [Creating an Organization Debug Certificate](#) in *Managing Content*.

3. Create a Yum configuration file under `/etc/yum.repos.d`, such as `satellite-disconnected.repo`, with the following contents:

```
[rhel-8-for-x86_64-baseos-rpms]
name=Red Hat Enterprise Linux 8 for x86_64 - BaseOS (RPMs)
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/rhel8/8/x86_64/baseos/os
enabled=1
sslclientcert = /etc/pki/katello/certs/org-debug-cert.pem
sslclientkey = /etc/pki/katello/certs/org-debug-cert.pem
sslcacert = /etc/pki/katello/certs/katello-server-ca.crt
sslverify = 1

[rhel-8-for-x86_64-appstream-rpms]
name=Red Hat Enterprise Linux 8 for x86_64 - AppStream (RPMs)
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/rhel8/8/x86_64/appstream/os
enabled=1
sslclientcert = /etc/pki/katello/certs/org-debug-cert.pem
sslclientkey = /etc/pki/katello/certs/org-debug-cert.pem
sslcacert = /etc/pki/katello/certs/katello-server-ca.crt
sslverify = 1

[satellite-6.11-for-rhel-8-x86_64-rpms]
name=Red Hat Satellite 6.11 for RHEL 8 RPMs x86_64
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/layered/rhel8/x86_64/satellite/6.11/os
enabled=1
sslclientcert = /etc/pki/katello/certs/org-debug-cert.pem
sslclientkey = /etc/pki/katello/certs/org-debug-cert.pem
sslcacert = /etc/pki/katello/certs/katello-server-ca.crt

[satellite-maintenance-6.11-for-rhel-8-x86_64-rpms]
name=Red Hat Satellite Maintenance 6.11 for RHEL 8 RPMs x86_64
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/layered/rhel8/x86_64/sat-maintenance/6.11/os
enabled=1
sslclientcert = /etc/pki/katello/certs/org-debug-cert.pem
sslclientkey = /etc/pki/katello/certs/org-debug-cert.pem
sslcacert = /etc/pki/katello/certs/katello-server-ca.crt
sslverify = 1
```

4. In the configuration file, replace `/etc/pki/katello/certs/org-debug-cert.pem` in `sslclientcert` and `sslclientkey` with the location of the downloaded organization debug certificate.
5. Update `satellite.example.com` with the correct FQDN for your deployment.
6. Replace `My_Organization` with the correct organization label in the `baseurl`. To obtain the organization label, enter the command:

```
# hammer organization list
```

7. Enter the `reposync` command:
  - On Satellite Server running Red Hat Enterprise Linux 7:

```
# reposync --delete --download-metadata -p ~/Satellite-repos -n \
-r rhel-8-for-x86_64-baseos-rpms \
-r rhel-8-for-x86_64-appstream-rpms \
-r satellite-6.11-for-rhel-8-x86_64-rpms \
-r satellite-maintenance-6.11-for-rhel-8-x86_64-rpms
```

- On Satellite Server running Red Hat Enterprise Linux 8:

```
# reposync --delete --download-metadata -p ~/Satellite-repos -n \
--repo rhel-8-for-x86_64-baseos-rpms \
--repo rhel-8-for-x86_64-appstream-rpms \
--repo satellite-6.11-for-rhel-8-x86_64-rpms \
--repo {RepoRHEL8ServerSatelliteMaintenanceProductVersion}
```

This downloads the contents of the repositories from the connected Satellite Server and stores them in the `~/Satellite-repos` directory.

8. Verify that the RPMs have been downloaded and the repository data directory is generated in each of the sub-directories of `~/Satellite-repos`.
9. Archive the contents of the directory

```
# cd ~
# tar czf Satellite-repos.tgz Satellite-repos
```

10. Use the generated **Satellite-repos.tgz** file to upgrade in the disconnected Satellite Server.

Perform the following steps on the disconnected Satellite Server:

1. Copy the generated **Satellite-repos.tgz** file to your disconnected Satellite Server
2. Extract the archive to anywhere accessible by the **root** user. In the following example **/root** is the extraction location.

```
# cd /root
# tar zxf Satellite-repos.tgz
```

3. Create a Yum configuration file under `/etc/yum.repos.d`, such as **satellite-disconnected.repo**, with the following contents:

```
[rhel-8-for-x86_64-baseos-rpms]
name=Red Hat Enterprise Linux 8 for x86_64 - BaseOS (RPMs)
baseurl=file:///root/Satellite-repos/rhel-8-for-x86_64-baseos-rpms
enabled=1

[rhel-8-for-x86_64-appstream-rpms]
name=Red Hat Enterprise Linux 8 for x86_64 - AppStream (RPMs)
baseurl=file:///root/Satellite-repos/rhel-8-for-x86_64-appstream-rpms
enabled=1

[satellite-6.11-for-rhel-8-x86_64-rpms]
name=Red Hat Satellite 6 for RHEL 8 Server RPMs x86_64
baseurl=file:///root/Satellite-repos/satellite-6.11-for-rhel-8-x86_64-rpms
enabled=1
```

```
[satellite-maintenance-6.11-for-rhel-8-x86_64-rpms]
name=Red Hat Satellite Maintenance 6 for RHEL 8 Server RPMs x86_64
baseurl=file:///root/Satellite-repos/satellite-maintenance-6.11-for-rhel-8-x86_64-rpms
enabled=1
```

- In the configuration file, replace the **/root/Satellite-repos** with the extracted location.
- Check the available versions to confirm the next minor version is listed:

```
# satellite-maintain upgrade list-versions
```

- Use the health check option to determine if the system is ready to upgrade. On first use of this command, **satellite-maintain** prompts you to enter the hammer admin user credentials and saves them in the **/etc/foreman-maintain/foreman-maintain-hammer.yml** file.

```
# satellite-maintain upgrade check --whitelist="check-upstream-repository,repositories-validate" --target-version 6.11.z
```

- Review the results and address any highlighted error conditions before performing the upgrade.
- Because of the lengthy update time, use a utility such as **tmux** to suspend and reattach a communication session. You can then check the upgrade progress without staying connected to the command shell continuously.  
If you lose connection to the command shell where the upgrade command is running, you can see the logged messages in the **/var/log/foreman-installer/satellite.log** file to check if the process was completed successfully.

- Perform the upgrade:

```
# satellite-maintain upgrade run --whitelist="check-upstream-repository,repositories-validate" --target-version 6.11.z
```

- Check when the kernel packages were last updated:

```
# rpm -qa --last | grep kernel
```

- Optional: If a kernel update occurred since the last reboot, stop Satellite services and reboot the system:

```
# satellite-maintain service stop
# reboot
```

## 6.2.2. Updating Disconnected Satellite Server on Red Hat Enterprise Linux 7

Complete the following steps on the connected Satellite Server for Red Hat Enterprise Linux 7.

- Ensure that you have synchronized the following repositories in your connected Satellite Server.

```
rhel-7-server-ansible-2.9-rpms
rhel-7-server-rpms
rhel-7-server-satellite-6.11-rpms
```



```
rhel-7-server-satellite-maintenance-6.11-rpms
rhel-server-rhsc1-7-rpms
```

2. Download the debug certificate of the organization and store it locally at, for example, **/etc/pki/katello/certs/org-debug-cert.pem** or a location of your choosing.
3. Create a Yum configuration file under **/etc/yum.repos.d** with the following repository information:

```
[rhel-7-server-ansible-2.9-rpms]
name=Ansible 2.9 RPMs for Red Hat Enterprise Linux 7 Server x86_64
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/rhel/server/7/$releasever/$basearch/ansible/2.9/os/
enabled=1
sslclientcert = /etc/pki/katello/certs/org-debug-cert.pem
sslclientkey = /etc/pki/katello/certs/org-debug-cert.pem
sslcacert = /etc/pki/katello/certs/katello-server-ca.crt
sslverify = 1

[rhel-7-server-rpms]
name=Red Hat Enterprise Linux 7 Server RPMs x86_64
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/rhel/server/7/7Server/x86_64/os/
enabled=1
sslclientcert = /etc/pki/katello/certs/org-debug-cert.pem
sslclientkey = /etc/pki/katello/certs/org-debug-cert.pem
sslcacert = /etc/pki/katello/certs/katello-server-ca.crt
sslverify = 1

[rhel-7-server-satellite-6.11-rpms]
name=Red Hat Satellite 6 for RHEL 7 Server RPMs x86_64
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/rhel/server/7/7Server/x86_64/satellite/6.11/os/
enabled=1
sslclientcert = /etc/pki/katello/certs/org-debug-cert.pem
sslclientkey = /etc/pki/katello/certs/org-debug-cert.pem
sslcacert = /etc/pki/katello/certs/katello-server-ca.crt

[rhel-7-server-satellite-maintenance-6.11-rpms]
name=Red Hat Satellite Maintenance 6 for RHEL 7 Server RPMs x86_64
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/rhel/server/7/7Server/x86_64/sat-maintenance/6/os/
enabled=1
sslclientcert = /etc/pki/katello/certs/org-debug-cert.pem
sslclientkey = /etc/pki/katello/certs/org-debug-cert.pem
sslcacert = /etc/pki/katello/certs/katello-server-ca.crt
sslverify = 1

[rhel-server-rhsc1-7-rpms]
name=Red Hat Software Collections RPMs for Red Hat Enterprise Linux 7 Server x86_64
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/rhel/server/7/7Server/x86_64/rhsc1/1/os/
enabled=1
sslclientcert = /etc/pki/katello/certs/org-debug-cert.pem
```

```

sslclientkey = /etc/pki/katello/certs/org-debug-cert.pem
sslcacert = /etc/pki/katello/certs/katello-server-ca.crt
sslverify = 1

```

- In the configuration file, replace **/etc/pki/katello/certs/org-debug-cert.pem** in **sslclientcert** and **sslclientkey** with the location of the downloaded organization debug certificate.
- Update **satellite.example.com** with correct FQDN for your deployment.
- Replace **My\_Organization** with the correct organization label in the **baseurl**. To obtain the organization label, enter the command:

```
# hammer organization list
```

- Enter the **reposync** command:

```

# reposync --delete --download-metadata -p ~/Satellite-repos -n \
-r rhel-7-server-ansible-2.9-rpms \
-r rhel-7-server-rpms \
-r rhel-7-server-satellite-6.11-rpms \
-r rhel-7-server-satellite-maintenance-6.11-rpms \
-r rhel-server-rhsc1-7-rpms

```

This downloads the contents of the repositories from the connected Satellite Server and stores them in the directory **~/Satellite-repos**. The **reposync** command in Red Hat Enterprise Linux 7 downloads the RPMs but not the Yum metadata.

Because of this, you must manually run **createrepo** in each sub-directory of **Satellite-repos**. Make sure you have the **createrepo** rpm installed. If not use the following command to install it.

```
# satellite-maintain packages install createrepo
```

Run the following command to create repodata in each sub-directory of **~/Satellite-repos** :

```

# cd ~/Satellite-repos
# for directory in */
do
  echo "Processing $directory"
  cd $directory
  createrepo .
  cd ..
done

```

- Verify that the RPMs have been downloaded and the repository data directory is generated in each of the sub-directories of **~/Satellite-repos**.
- Archive the contents of the directory

```

# cd ~
# tar czf Satellite-repos.tgz Satellite-repos

```

- Use the generated **Satellite-repos.tgz** file to upgrade in the disconnected Satellite Server.

Perform the following steps on the disconnected Satellite Server

1. Copy the generated **Satellite-repos.tgz** file to your disconnected Satellite Server
2. Extract the archive to anywhere accessible by the **root** user. In the following example **/root** is the extraction location.

```
# cd /root
# tar xzf Satellite-repos.tgz
```

3. Create a Yum configuration file under **/etc/yum.repos.d** with the following repository information:

```
[rhel-7-server-ansible-2.9-rpms]
name=Ansible 2.9 RPMs for Red Hat Enterprise Linux 7 Server x86_64
baseurl=file:///root/Satellite-repos/rhel-7-server-ansible-2.9-rpms
enabled=1

[rhel-7-server-rpms]
name=Red Hat Enterprise Linux 7 Server RPMs x86_64
baseurl=file:///root/Satellite-repos/rhel-7-server-rpms
enabled=1

[rhel-7-server-satellite-6.11-rpms]
name=Red Hat Satellite 6 for RHEL 7 Server RPMs x86_64
baseurl=file:///root/Satellite-repos/rhel-7-server-satellite-6.11-rpms
enabled=1

[rhel-7-server-satellite-maintenance-6.11-rpms]
name=Red Hat Satellite Maintenance 6 for RHEL 7 Server RPMs x86_64
baseurl=file:///root/Satellite-repos/rhel-7-server-satellite-maintenance-6.11-rpms
enabled=1

[rhel-server-rhsccl-7-rpms]
name=Red Hat Software Collections RPMs for Red Hat Enterprise Linux 7 Server x86_64
baseurl=file:///root/Satellite-repos/rhel-server-rhsccl-7-rpms
enabled=1
```

4. In the configuration file, replace the **/root/Satellite-repos** with the extracted location.
5. Check the available versions to confirm the next minor version is listed:

```
# satellite-maintain upgrade list-versions
```

6. Use the health check option to determine if the system is ready for upgrade. On first use of this command, **satellite-maintain** prompts you to enter the hammer admin user credentials and saves them in the **/etc/foreman-maintain/foreman-maintain-hammer.yml** file.

```
# satellite-maintain upgrade check --whitelist="check-upstream-repository,repositories-validate" --target-version 6.11.z
```

7. Review the results and address any highlighted error conditions before performing the upgrade.
8. Because of the lengthy update time, use a utility such as **tmux** to suspend and reattach a communication session. You can then check the upgrade progress without staying connected to the command shell continuously.

If you lose connection to the command shell where the upgrade command is running, you can see the logged messages in the `/var/log/foreman-installer/satellite.log` file to check if the process completed successfully.

9. Perform the upgrade:

```
# satellite-maintain upgrade run --whitelist="check-upstream-repository,repositories-setup,repositories-validate" --target-version 6.11.z
```

10. Check when the kernel packages were last updated:

```
# rpm -qa --last | grep kernel
```

11. Optional: If a kernel update occurred since the last reboot, stop Satellite services and reboot the system:

```
# satellite-maintain service stop  
# reboot
```

## 6.3. UPDATING CAPSULE SERVER

Use this procedure to update Capsule Servers to the next minor version.

### Procedure

1. Ensure that the Satellite Maintenance repository is enabled:

```
# subscription-manager repos --enable \  
rhel-7-server-satellite-maintenance-6.11-rpms
```

2. Check the available versions to confirm the next minor version is listed:

```
# satellite-maintain upgrade list-versions
```

3. Use the health check option to determine if the system is ready for upgrade:

```
# satellite-maintain upgrade check --target-version 6.11.z
```

Review the results and address any highlighted error conditions before performing the upgrade.

4. Because of the lengthy update time, use a utility such as **tmux** to suspend and reattach a communication session. You can then check the upgrade progress without staying connected to the command shell continuously.

If you lose connection to the command shell where the upgrade command is running, you can see the logged messages in the `/var/log/foreman-installer/capsule.log` file to check if the process completed successfully.

5. Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.11.z
```

6. Check when the kernel packages were last updated:

```
# rpm -qa --last | grep kernel
```

7. Optional: If a kernel update occurred since the last reboot, stop Satellite services and reboot the system:

```
# satellite-maintain service stop  
# reboot
```