



## **Red Hat Satellite 6.3**

# **Upgrading and Updating Red Hat Satellite**

Upgrading and updating Red Hat Satellite Server and Capsule Server



# Red Hat Satellite 6.3 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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# CHAPTER 1. UPGRADE OVERVIEW



## WARNING

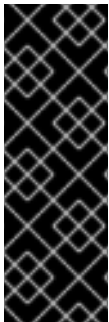
If you have Satellite 6 installed in a high availability configuration, contact Red Hat Support before upgrading to Satellite 6.3.

This chapter details the prerequisites and available upgrade paths to Red Hat Satellite 6.3. Review this information before upgrading your current Red Hat Satellite 6 installation.

In this guide, the terms update, upgrade, 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 6.2 to Satellite 6.3.
- **Updating** — The process of advancing your Satellite Server and Capsule Server installations from a z-stream release to the next, for example Satellite 6.2.10 to Satellite 6.2.11.
- **Migrating** — The process of moving an existing Satellite installation to another Red Hat Enterprise Linux server.

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 customer portal.



## IMPORTANT

The Red Hat Satellite Server and Capsule Server y-stream versions must match. For example, a 6.2 Satellite Server is not compatible with a 6.3 Capsule Server and a 6.3 Satellite Server is not compatible with a 6.2 Capsule Server. Mismatching Satellite Server and Capsule Server versions will result in the Capsule Server failing silently. However, a Capsule Server using one z-stream version older than the Satellite Server is supported. For example, a Satellite 6.2.11 Satellite Server is compatible with a 6.2.10 Capsule Server.

## 1.1. PREREQUISITES

Upgrading to Satellite 6.3 affects your entire Satellite infrastructure. Before proceeding, complete the following:

- Read the [Red Hat Satellite 6.3 Release Notes](#).
- Review this guide so that you are aware of the upgrade process and its impact.
- Plan your upgrade path. For more information, see [Section 1.2, “Upgrade Paths”](#).
- Plan for the required Satellite downtime. The upgrade process requires that Satellite services be shut down for the duration.

- Plan for the storage requirements. The storage requirements for Red Hat Satellite 6.3 have changed from the previous version. For more information, see [Storage Requirements and Recommendations](#) in the *Installation Guide*.
- Back up your Satellite Server and all Capsule Servers. For more information, see [Backup and Disaster Recovery](#) in the *Red Hat Satellite 6.2 Server Administration Guide*.



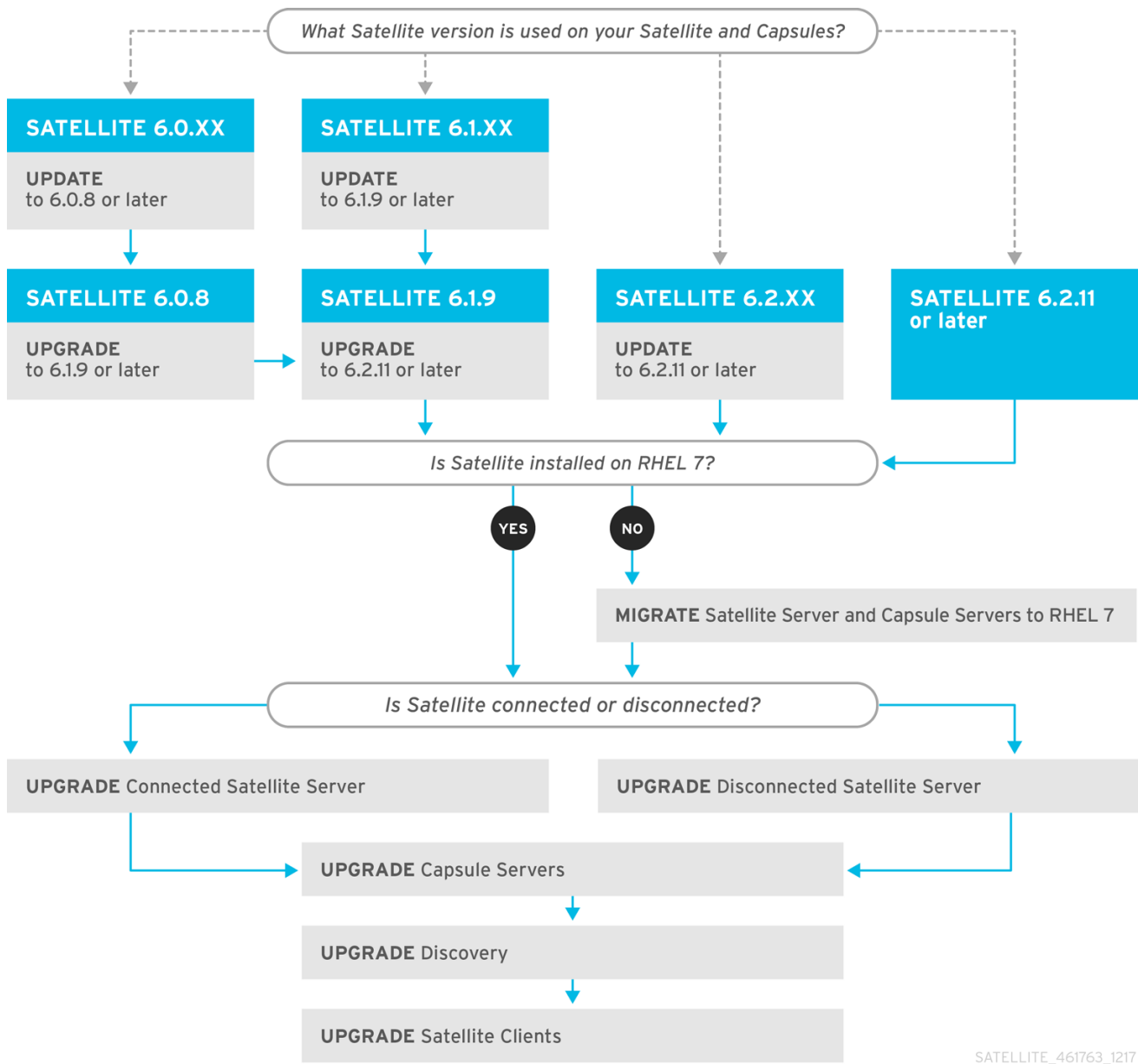
### WARNING

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

The upgrade path to Red Hat Satellite 6.3 is determined by your environment. Satellite 6.3 is supported only on Red Hat Enterprise Linux 7. Satellite Servers and Capsule Servers on Red Hat Enterprise Linux 6 must be updated to Satellite 6.2.13 or later, migrated to Red Hat Enterprise Linux 7, then upgraded to Satellite 6.3. Satellite Servers and Capsule Servers on Red Hat Enterprise Linux 7 must be updated to Satellite 6.2.11 or later, then upgraded to Satellite 6.3.



**Figure 1.1. Overview of Satellite 6.3 Upgrade Paths**

Supported upgrade paths:

- Satellite 6.2.11 or later → Satellite 6.3
- Satellite 6.1.9 or later → Satellite 6.2.11 or later → Satellite 6.3
- Satellite 6.0.x → Satellite 6.1.9 or later → Satellite 6.2.11 or later → Satellite 6.3

**WARNING**

Upgrading from the Beta to GA version is not supported.

The high level steps in upgrading to Satellite 6.3 are as follows. If your installation already meets some of the following requirements, omit that step. For example, if Satellite 6.2.11 is already installed, you can omit the update step.

1. Upgrade Satellite Server and all Capsule Servers from Satellite 6.0.x to Satellite 6.1.9. For more information, see [Upgrading Red Hat Satellite Server and Capsule Server](#) in the Red Hat Satellite 6.1 *Installation Guide*.
2. If Satellite 6.1 is installed, upgrade Satellite Server and all Capsule Servers from Satellite 6.1.9 or later to Satellite 6.2.11 or later. For more information, see [Upgrading Red Hat Satellite Server and Capsule Server](#) in the Red Hat Satellite 6.2 *Installation Guide*.
3. If Satellite 6.2.x is installed, but not Satellite 6.2.11 or later, update Satellite Server and all Capsule Servers to Satellite 6.2.11 release. Satellite Servers and Capsule Servers on Red Hat Enterprise Linux 6 must be updated to Satellite 6.2.13. For more information, see [Updating Satellite Server, Capsule Server, and Content Hosts](#) in the Red Hat Satellite 6.2 *Installation Guide*.
4. Migrate Satellite Server and all Capsule Servers to Red Hat Enterprise Linux 7. For more information, see [Section 2.3, “Migrating from Red Hat Enterprise Linux 6 to Red Hat Enterprise Linux 7”](#).
5. Upgrade Satellite Server and all Capsule Servers to Satellite 6.3. For more information, see [Section 2.4, “Upgrading Satellite Server”](#).
6. Upgrade the Satellite tools on all Satellite clients. For more information, see [Section 2.6.2, “Upgrading Satellite Clients”](#).

## Self-Registered Satellites

Red Hat Satellite no longer supports self-registered Satellites. You must register self-registered Satellite Servers to the Red Hat Content Delivery Network. For more information about self-registered Satellites, see [Section 2.1, “Preparing a Self-Registered Connected Satellite”](#).

## 1.3. FOLLOWING THE PROGRESS OF THE UPGRADE

Because of the lengthy upgrade time, use a utility such as **screen** 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 about using the screen command, see [How do I use the screen command?](#) article in the *Red Hat Knowledge Base*. You can also see the **screen** manual page for more information.

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.

## CHAPTER 2. UPGRADING RED HAT SATELLITE



### WARNING

If you have Satellite 6 installed in a high availability configuration, contact Red Hat Support before upgrading to Satellite 6.3.

Use this chapter to upgrade your existing Red Hat Satellite environment to Red Hat Satellite 6.3.

The chapter includes prerequisites such as [Section 2.3, “Migrating from Red Hat Enterprise Linux 6 to Red Hat Enterprise Linux 7”](#), scenarios for [Section 2.4, “Upgrading Satellite Server”](#), a scenario for [Section 2.5, “Upgrading Capsule Servers”](#), and [Section 2.6, “Post-Upgrade Tasks”](#).

Before upgrading, see the [Section 1.1, “Prerequisites”](#).

### 2.1. PREPARING A SELF-REGISTERED CONNECTED SATELLITE

Red Hat Satellite 6.3 does not support self-registered Satellites. You must register self-registered Satellite Servers to the Red Hat Content Delivery Network.

To register a self-registered Satellite to the Red Hat Content Delivery Network, complete the following steps.

1. Verify that the Satellite Server is managed by Foreman:
  - a. In the Satellite web UI, navigate to **Hosts > All Hosts**.
  - b. On the host that you want to register, click **Edit**.
  - c. In the upper right of the screen, if you can view the **Unmanage host** button, click **Unmanage host**.
2. On the base system that you want to register to the Red Hat Content Delivery Network, enter the following commands to remove the subscriptions and unregister the host:

```
# subscription-manager remove --all
# subscription-manager unregister
```

3. Remove the **katello-ca-consumer** package or any other version of the package:

```
# yum remove 'katello-ca-consumer*'
```

4. The katello agent is used only for clients of Satellite and must be removed. To remove the **katello-agent** and gofer packages, stop and disable the **goferd** service, then enter the remove command:

```
# systemctl stop goferd
# systemctl disable goferd
# yum remove katello-agent python-gofer-proton gofer
```

- Point the base system to Red Hat for registration by restoring the backup configuration with the following commands:

```
# cd /etc/rhsm
# mv rhsm.conf rhsm.satellite.back
# mv rhsm.conf.kat-backup rhsm.conf
```

- Register your Satellite Server to the Red Hat Customer Portal:



#### NOTE

If your Red Hat Satellite 6 subscription is in the Satellite Manifest, you must remove the subscription. This makes the Red Hat Satellite 6 subscription available to attach to the target server. For more information, see the [Managing Subscriptions](#) section of the *Content Management Guide*.

```
# subscription-manager register
```

- Attach a Satellite subscription to the system:

```
# subscription-manager list --available --matches '*Red Hat
Satellite*'
# subscription-manager attach --pool=pool_id
```

- To prevent problems with third-party or incorrect Red Hat repositories, disable all repositories:

```
# subscription-manager repos --disable "*"
```

- To enable the supported repositories for Red Hat Satellite 6.2, enter the following command:

- For Red Hat Enterprise Linux 6:

```
# subscription-manager repos --enable=rhel-6-server-rpms \
--enable=rhel-server-rhsc1-6-rpms \
--enable=rhel-6-server-satellite-6.2-rpms
```

- For Red Hat Enterprise Linux 7:

```
# subscription-manager repos --enable=rhel-7-server-rpms \
--enable=rhel-server-rhsc1-7-rpms \
--enable=rhel-7-server-satellite-6.2-rpms
```

- Clean any metadata from any non-Red Hat Content Delivery Network **yum** repositories:

```
# yum clean all
```

For Red Hat Enterprise Linux 6 users, proceed to the [Section 2.3, “Migrating from Red Hat Enterprise Linux 6 to Red Hat Enterprise Linux 7”](#).

For Red Hat Enterprise Linux 7 users, proceed to [Section 2.4, “Upgrading Satellite Server”](#).

## 2.2. PREPARING A SELF-REGISTERED DISCONNECTED SATELLITE

If your self-registered Satellite is in a disconnected environment, it is possible to upgrade it by using an ISO image. This method is not recommended for any other situation as ISO images might not contain the latest updates, bug fixes, and functionality.

If the base system has not been updated from the Red Hat CDN, package dependency errors are possible. To resolve dependency errors, you must manually download and install the required version of packages, see [Section 2.2.4, “Downloading Packages Manually”](#) for instructions.

To reduce dependency errors when upgrading or installing, use the latest version of Red Hat Enterprise Linux that was available at the time the version of Red Hat Satellite you want to install was released. You can check the release date of the version of Red Hat Satellite you want to install in the Red Hat Knowledgebase article [Red Hat Satellite Release Dates](#) and then check for the minor version of Red Hat Enterprise Linux that was current at that time in the Red Hat Knowledgebase article [Red Hat Enterprise Linux Release Dates](#).

### 2.2.1. Unregistering Satellite Server

1. Verify whether Satellite Server’s base system is managed by Foreman:
  - a. In the Satellite web UI, navigate to **Hosts > All Hosts**.
  - b. On the host that you want to migrate, click **Edit**.
  - c. In the upper right of the screen, if you can view the **Unmanage host** button, click **Unmanage host**.
2. On the base system that you want to migrate, enter the following commands to remove the subscriptions and unregister the host:

```
# subscription-manager remove --all
# subscription-manager unregister
```

### 2.2.2. Downloading the Binary DVD Images

1. Go to [Red Hat Customer Portal](#) and log in.
2. Click **DOWNLOADS**.
3. Select **Red Hat Enterprise Linux**.
4. Ensure that you have the correct product and version for your environment.
  - **Product Variant** is set to **Red Hat Enterprise Linux Server**.
  - **Version** is set to the minor version of the product you plan to use as the base system.
  - **Architecture** is set to the 64 bit version.
5. On the **Product Software** tab, download the Binary DVD image for the version you want to use.
6. Click **DOWNLOADS** and select **Red Hat Satellite**.
7. Ensure that you have the correct product and version for your environment.
  - **Product Variant** is set to **Red Hat Satellite**.
  - **Version** is set to the minor version of the product you want use.

- **Architecture** is set to the 64 bit version.
8. On the **Product Software** tab, download the Binary DVD image for the version you want to use.
  9. Copy the ISO files to the Satellite base system or other accessible storage device.

```
# scp localfile username@hostname:remotefile
```

### 2.2.3. Configuring Satellite Server with Offline Repositories

1. Create a mount point.

```
# mkdir /media/rhel7-server
```

2. Mount the ISO image for Red Hat Enterprise Linux to the mount point.

```
# mount -o loop rhel7-Server-DVD.iso /media/rhel7-server
```

3. Copy the ISO file's repository data file.

```
# cp /media/rhel7-server/media.repo /etc/yum.repos.d/rhel7-server.repo
```

4. Edit the repository data file and add the **baseurl** directive.

```
baseurl=file:///media/rhel7-server/
```

The following example shows the repository data file using Red Hat Enterprise Linux 7.2:

```
# vi /etc/yum.repos.d/rhel7-server.repo
[InstallMedia]
name=Red Hat Enterprise Linux 7.2
mediaid=1446216863.790260
metadata_expire=-1
gpgcheck=0
cost=500
baseurl=file:///media/rhel7-server/
```

5. Verify that the repository is configured.

```
# yum repolist
Loaded plugins: product-id, search-disabled-repos, subscription-
manager
This system is not registered to Red Hat Subscription Management.
You can use subscription-manager to register.
repo id          repo name          status
InstallMedia     Red Hat Enterprise Linux 7.2  4,620
```

6. Create a mount point:

```
# mkdir /media/sat6
```

7. Mount the ISO image for Red Hat Satellite Server to the mount point.

```
# mount -o loop sat6-DVD.iso /media/sat6
```

8. Change to the directory where the Satellite ISO is mounted.

```
# cd /media/sat6/
```

9. Stop Katello services.

```
# katello-service stop
```

10. Run the installer script in the mounted directory.

```
# ./install_packages
```

If the script fails because of missing or outdated packages, you must download and install these separately. See [Section 2.2.4, “Downloading Packages Manually”](#) for instructions.

If the script fails because of installed packages being newer than those required, enter **yum distribution-synchronization** to downgrade the installed packages to the versions that come from the Red Hat Enterprise Linux ISO, then run the installation script again. This occurs if you have repositories configured whose source is not the Red Hat Enterprise Linux ISO. Use of such repositories is an unsupported configuration.

11. Disable the ISO based repositories to avoid conflicts with repositories provided by Satellite Server.

- a. Install **yum-config-manager**:

```
# yum install yum-utils
```

- b. Disable the ISO based repositories:

```
# yum-config-manager --disable InstallMedia --disable satellite-  
local --disable scl-local --disable satellite-puppet4
```

- c. Confirm **yum** repositories are disabled:

```
# yum repolist
```

## 2.2.4. Downloading Packages Manually

If you must download a package manually, complete the following procedure:

1. Go to [Red Hat Customer Portal](#) and log in.
2. Click **DOWNLOADS**.
3. Select **RPM Package Search** and search for the required package.
4. Locate the package suitable for your architecture and download it to the system where Satellite is installed.

5. Optional: Remove `?auth=` and the following authentication hash from after the RPM package name.
6. Use `yum localinstall` to install the required packages simultaneously.

## 2.3. MIGRATING FROM RED HAT ENTERPRISE LINUX 6 TO RED HAT ENTERPRISE LINUX 7

Red Hat Satellite 6.3 is supported only on Red Hat Enterprise Linux 7. If you have Red Hat Satellite 6 running on Red Hat Enterprise Linux 6, you must first migrate to Red Hat Enterprise Linux 7. The migration process uses the Satellite clone tool, introduced with Red Hat Satellite 6.3. This tool creates a clone of an existing Satellite Server from a Satellite backup.

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 the Capsule Server.

### 2.3.1. Exclusions

The Satellite migration process includes only the Red Hat Satellite environment. Any customizations made outside the Satellite environment, for example manually configured cron jobs, are outside the scope of this guide.

### 2.3.2. Before You Begin

#### Terminology

Throughout this procedure, ensure that you understand the following terminology:

- Source server - existing Satellite Server or Capsule Server
- Target server - new server, to which Satellite Server or Capsule Server is being migrated

#### Requirements

In migrating a Satellite Server or Capsule Server, the following requirements apply:

- Install only a minimal Red Hat Enterprise Linux 7 instance. Do not install any Red Hat Enterprise Linux 7 software groups, or third-party applications. Complete the prerequisites in the [Preparing your environment for installation](#) section of the *Installation Guide*.
- The target server must have capacity to store the backup files, which the source server transfers to the target server, and the backup files when they are restored. If you have more than 500 GB of Pulp data, Red Hat recommends copying the Pulp data directly from the source server to the target server. Copying the Pulp data is generally faster than creating a compressed archive file of this data, then decompressing it on the target server. For more information about both these methods see [Section 2.3.4, “Migrating a Satellite Server”](#).

### 2.3.3. Satellite Server Migration Overview

The high-level steps of migrating Satellite Server or a Capsule Server are as follows:

1. Back up the source Satellite Server or Capsule Server.
2. Stop all Satellite services.



3. Copy Satellite data to the target server.
4. Shut down the source Satellite Server or Capsule Server.
5. Migrate the source Satellite Server or Capsule Server.
6. Finalize the target Satellite Server or Capsule Server configuration.
7. Decommission the source Satellite Server or Capsule Server.



### WARNING

Isolate the target server from internal networks to avoid unwanted communication with Capsule Servers and hosts. Reconnect the target server after the source server is decommissioned.

A connection to the Red Hat Content Delivery Network (CDN) is required for subscription activation and Satellite installation, unless installing from ISO files.

## 2.3.4. Migrating a Satellite Server

The following procedure describes migrating an existing Satellite Server installation to the target server.

1. On the source server, identify the current Red Hat Satellite subscription.

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

Note the Red Hat Satellite subscription pool ID because you need this in a later step.

2. On the source server, remove the Red Hat Satellite subscription.

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

3. On the source server, perform a backup and copy the Pulp data to the target server. Estimate the size of the Pulp data on your Satellite server to decide whether to include the Pulp data in the backup or not:

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

### If you have less than 500 GB of Pulp data

- a. Perform an online backup with MongoDB and PostgreSQL databases active including the Pulp data:

```
# katello-service stop
# katello-service start --only mongod,postgresql
# katello-backup --online-backup /backup --assumeeyes
```

In this example the backup files are output to the directory **/backup**.

- b. Stop and disable all Satellite services:

```
# katello-service stop
# for i in $(katello-service list| awk '{print $1}'); do
chkconfig $i off;done
```

- c. Copy the Pulp data to the target server:

```
# scp /backup/pulp_data.tar
root@target_server.example.com:/backup/
```

- d. On Satellite 6.3.1 and earlier, copy the Qpid data to the target server:

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

### If you have more than 500 GB of Pulp data

- a. Perform an online backup with MongoDB and PostgreSQL databases active excluding the Pulp data:

```
# katello-service stop
# katello-service start --only mongod,postgresql
# katello-backup --online-backup --skip-pulp-content /backup --
assumeyes
```

In this example the backup files are output to the directory **/backup**.

- b. Stop and disable all Satellite services:

```
# katello-service stop
# for i in $(katello-service list| awk '{print $1}'); do
chkconfig $i off;done
```

- c. Copy the Pulp data to the target server:

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

- d. On Satellite 6.3.1 and earlier, copy the Qpid data to the target server:

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

4. If the Remote Execution feature is enabled on the source server, copy the contents of the directory **/usr/share/foreman-proxy/.ssh** to the same directory on the target server. The private SSH key stored in this directory is required to enable Satellite Server remote access to hosts. For more details see [Running Jobs on Hosts](#) in the *Red Hat Satellite Managing Hosts* guide.

5. On the target server, either mount the shared storage or copy the following files and folder from the source Satellite Server.
  - **candlepin.dump**
  - **config\_files.tar.gz**
  - **foreman.dump**
  - **mongo\_dump** folder
6. Shut down the Red Hat Enterprise Linux server hosting the source server.
7. Register the target server to the Customer Portal, attach the necessary subscriptions, and enable the Satellite repositories. For more information, see [Installing Satellite Server from a Connected Network](#) in the *Red Hat Satellite 6.2 Installation Guide*.

- a. Register the target server to the Customer Portal:

```
# subscription-manager register your_customer_portal_credentials
```

- b. Attach the subscription to the target server:

```
# subscription-manager attach --pool=pool_ID
```

The Red Hat Satellite subscription pool ID is identified earlier in this procedure.

- c. Ensure **only** the required repositories are enabled.

```
# subscription-manager repos --disable=*
# subscription-manager repos \
--enable=rhel-7-server-rpms \
--enable=rhel-server-rhsc1-7-rpms \
--enable=rhel-7-server-satellite-maintenance-6-rpms \
--enable=rhel-7-server-satellite-6.2-rpms
```

8. On the target server, install the **satellite-clone** package.

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

9. On the target server, customize the **satellite-clone** configuration file.  
Edit the configuration file **/etc/satellite-clone/satellite-clone-vars.yml**. To change an item from the default, remove the comment character (**#**), and edit its value.

- a. Change the **backup\_dir** value to the path containing the backup files.
- b. Change the **rhel\_migration** value to **true**.
- c. Change other values to suit your requirements.

10. On the target server, run the **satellite-clone** tool.

```
# satellite-clone
```

11. On the target server, 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.

Reconfigure and enable DHCP, DNS, TFTP in the Satellite web UI. For more information, see [Configuring DNS, DHCP, and TFTP on Satellite Server](#) in the *Installation Guide*.

Enable remote execution:

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

12. Log in to the Satellite web UI as user **admin** and password **changeme**. Change the **admin** user's password.
13. Refresh the Satellite's manifest.
  - a. Log in to the Satellite web UI.
  - b. Ensure that the correct organization is selected.
  - c. Navigate to **Content > Red Hat Subscriptions**, then click **Manage Manifest**.
  - d. Click **Refresh Manifest**.
  - e. Navigate to **Content > Red Hat Subscriptions** and verify the available subscriptions are correct.
14. Edit Capsules' association with life cycles.

The cloning process breaks the association between Capsule Servers and their lifecycle environments to avoid interference with existing infrastructure. On the target Satellite Server, follow the instructions in file `/usr/share/satellite-clone/logs/reassociate_capsules.txt` to reverse these changes.
15. Update your network configuration, for example, DNS, to match the target server's IP address with its new host name.
16. If the source server uses the **virt-who** daemon, install and configure it on the target server.
  - a. Complete the prerequisite steps for the virt-who daemon. For more information, see [Prerequisites](#) in the *Virtual Instances Guide*.
  - b. Copy all the virt-who configuration files in directory `/etc/virt-who.d/` from the source server to the same directory on the target server.
  - c. Configure and start the virt-who daemon. For more information, see [Configuring and Starting virt-who Service](#) in the *Virtual Instances Guide*.
17. Restart **goferd** on all registered content hosts and Capsules.

```
# systemctl restart goferd
```

18. Decommission the source server.

### 2.3.5. Migrating a Capsule Server

The following procedure describes migrating an existing Capsule Server installation to the target server.

1. Install Red Hat Enterprise Linux 7 server. This is the new Capsule Server.
2. Install the new Capsule Server, but do not proceed to run the **satellite-installer**. For more information, see [Installing Capsule Server](#) in the *Installation Guide*, but stop after completing the *Installing Capsule Server* section.
3. Back up the source Capsule Server. For more information, see [Back up and Disaster Recovery](#) in the *Red Hat Satellite 6.2 Server Administration Guide*.
4. Stop all Satellite services on the source Capsule Server.

```
# katello-service stop
```

5. Copy all backup files from the source server to the target server.
6. Restore the Capsule Server on the target server.
7. Shut down the source Capsule Server.
8. Update your network configuration, for example, DNS, to match the target server's IP address with its new host name.
9. Decommission the source Capsule Server.

### Capsule Servers using Custom Certificates

If your Capsule Server is configured with custom certificates, you must configure the migrated Capsule Server with custom certificates again. Follow the procedure [Configuring Capsule Server with a Custom Server Certificate](#) in the *Installation Guide*.

## 2.4. UPGRADING SATELLITE SERVER

This section describes how to upgrade Satellite Server.

Red Hat Satellite 6.3 introduces **foreman-maintain**. This tool provides various features to update, upgrade, and help keep Satellite running.

### Before You Begin

- You must be on the minor version 6.2.11 or later of Red Hat Satellite Server 6.2 if installed on Red Hat Enterprise Linux 7. If Satellite Servers and Capsule Servers are on Red Hat Enterprise Linux 6, the minimum version is 6.2.13 and they must then be migrated to Red Hat Enterprise Linux 7. You do not need to upgrade to a Red Hat Satellite version higher than these stated minimums to upgrade to Satellite 6.3. Direct upgrades from earlier minor versions are not supported. For more information, see [Upgrading Satellite Server and Capsule Server](#) in the *Red Hat Satellite 6.2 Installation Guide*.
- Review and update your firewall configuration prior to upgrading your Satellite Server. For more information, see the [Ports and Firewalls Requirements](#) section of the *Red Hat Satellite Installation Guide*.
- 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. Restore any hooks only after Satellite is known to be working after the upgrade is complete.
- If you have edited any of the default templates, backup them up 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 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.



### 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.

## Configuring the BASH shell

The BASH shell stores the location of a binary in a hash table. During the upgrade, the location of the **katello-service** script is changed, but BASH does not register this change, and **foreman-maintain** fails if it calls the script after the change.

- Optional: Before the upgrade, users of the BASH shell can set the **checkhash** option temporarily to ensure **katello-service** works after the installer completes. Enter a command as follows in your BASH shell:

```
# shopt -s checkhash
```

- After a successful or failed upgrade, in all currently running BASH shells, enter the following command:

```
# hash -d katello-service 2> /dev/null
```

## Upgrade Scenarios

- To upgrade a Satellite Server connected to the Red Hat Content Delivery Network, proceed to [Section 2.4.1, “Upgrading a Connected Satellite Server”](#).
- To upgrade a Satellite Server not connected to the Red Hat Content Delivery Network, proceed to [Section 2.4.2, “Upgrading a Disconnected Satellite Server”](#).

You cannot upgrade a self-registered Satellite. You must register the self-registered Satellite to the Red Hat Content Delivery Network (CDN) and then perform the upgrade. To register the self-registered Satellite to the CDN, see [Section 2.1, “Preparing a Self-Registered Connected Satellite”](#).

### 2.4.1. Upgrading a Connected Satellite Server

Use this procedure for a Satellite Server connected to the Red Hat Content Delivery Network.

#### Upgrade Satellite Server

1. Create a backup.
  - On a virtual machine, take a snapshot.
  - On a physical machine, create a backup.  
For information on backups, see [Backup and Disaster Recovery](#) in the *Red Hat Satellite 6.2 Server Administration Guide*.
2. Back up the DNS and DHCP configuration files `/etc/zones.conf` and `/etc/dhcp/dhcpd.conf` as the installer only supports one domain or subnet, and therefore restoring changes from these backups might be required.
3. 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.
4. In the Satellite web UI, navigate to **Content > Red Hat Subscriptions**, and then click **Manage Manifest**. In the Subscription Manifest pane, click the **Actions** tab, and then click **Refresh Manifest** to download the latest copy of the Subscription Manifest.
5. Configure the repositories in the Satellite web UI:
  - a. In the Satellite web UI, navigate to **Content > Red Hat Repositories** and select the **RPMS** tab.
  - b. From the **PRODUCT** list, find and expand **Red Hat Enterprise Linux Server**.
  - c. From the **REPOSITORY SET** list, find and expand **Red Hat Satellite Tools 6.3 (for RHEL7 Server) (RPMS)**.
  - d. Select **Red Hat Satellite Tools 6.3 for RHEL 7 Server RPMS x86\_64**.
6. Synchronize the newly enabled repositories:
  - a. In the Satellite web UI, navigate to **Content > Sync Status**.
  - b. Click the arrow next to the product to view available repositories.
  - c. Select the repositories for 6.3.
  - d. Click **Synchronize Now**.  
If you get an error when trying to update a repository, ensure 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. Refresh the manifest and if the problem persists, raise a support request.
7. Update any pre-existing Content Views that utilize 6.2 version repositories with the new version for 6.3. Publish and promote updated versions of any Content Views that now have the new 6.3 version repositories.

8. Refresh your subscription:

```
# subscription-manager refresh
```

9. Enable the Satellite Maintenance repository:

```
# subscription-manager repos --enable rhel-7-server-satellite-  
maintenance-6-rpms
```

10. Install **foreman-maintain**:

```
# yum install rubygem-foreman_maintain
```

11. Check the available versions to confirm 6.3 is listed:

```
# foreman-maintain upgrade list-versions
```

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

```
# foreman-maintain upgrade check --target-version 6.3
```

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

13. Because of the lengthy upgrade time, use a utility such as **screen** 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 about using the screen command, see [How do I use the screen command?](#) article in the *Red Hat Knowledge Base*.

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.

14. Perform the upgrade:

```
# foreman-maintain upgrade run --target-version 6.3
```

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

```
# hash -d katello-service 2> /dev/null
```

16. Check and restore any changes required to the DNS and DHCP configuration files using the backups made earlier.

17. If you made changes in the previous step, restart Katello services:

```
# katello-service restart
```

18. 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
```



■

## 2.4.2. Upgrading a Disconnected Satellite Server

Use this procedure for a Satellite Server not connected to the Red Hat Content Delivery Network.

### Before You Begin

- You must be on the minor version 6.2.11 or later of Red Hat Satellite Server 6.2 if installed on Red Hat Enterprise Linux 7. If Satellite Servers and Capsule Servers are on Red Hat Enterprise Linux 6, the minimum version is 6.2.13 and they must then be migrated to Red Hat Enterprise Linux 7. You do not need to upgrade to a Red Hat Satellite version higher than these stated minimums to upgrade to Satellite 6.3. Direct upgrades from earlier minor versions are not supported. For more information, see [Upgrading Satellite Server and Capsule Server](#) in the *Red Hat Satellite 6.2 Installation Guide*.
- Review and update your firewall configuration prior to upgrading your Satellite Server. For additional information, see [Ports and Firewalls Requirements](#) section of the *Red Hat Satellite Installation Guide*.
- 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.



### 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 Disconnected Satellite Server

1. Create a backup.
  - On a virtual machine, take a snapshot.
  - On a physical machine, create a backup.
2. 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
```

If the upgrade check reports a failure due to running tasks, then it is recommended that you wait for the tasks to complete. It is possible to cancel some tasks, but you should follow the guidance in the Red Hat Knowledgebase solution [How to manage paused tasks on Red Hat Satellite 6](#) to understand which tasks are safe to cancel and which are not safe to cancel.

3. Back up the DNS and DHCP configuration files `/etc/zones.conf` and `/etc/dhcp/dhcpd.conf` as the installer only supports one domain or subnet, and therefore restoring changes from these backups might be required.
4. If you have made manual edits to DNS or DHCP configuration files and do not want the changes overwritten, run the following command.

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

5. 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.
6. Make sure all external Capsule Servers are assigned to an organization, otherwise they might get unregistered due to host-unification changes.
7. Stop Katello services.

```
# katello-service stop
```

8. Obtain the latest ISO file, mount it, and install the packages following the procedures in the [Downloading and Installing from a Disconnected Network](#) section of the *Red Hat Satellite Installation Guide*.
9. If you have custom Apache server configurations, they will be reverted to the installation defaults in the next step. If you want to see what will be changed **when you perform the upgrade**, you can enter the upgrade command with the `--noop` (no operation) option and review the changes that will be applied when you enter the upgrade command in the following step. If you choose not to do this test, skip to the next step now. Alternatively, proceed as follows:

- 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** and **mongod** database services.

```
# systemctl start postgresql
# systemctl start mongod
```

- d. Run the installer script with the **--noop** option as follows.

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

Review the `/var/log/foreman-installer/satellite.log` to see what changes **would be applied** if the **--noop** option was omitted. Look for the **+++** and **---** symbols indicating changes to configurations files. Because the above "no operation" option does not actually create the files, and some Puppet resources in the module expect them to be there, some failure messages are to be expected.

- e. Stop Katello services.

```
# katello-service stop
```

10. Because of the lengthy upgrade time, use a utility such as **screen** 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 about using the `screen` command, see [How do I use the screen command?](#) article in the *Red Hat Knowledge Base*.

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.

11. Perform the upgrade by running the installer script with the **--upgrade** option.

```
# satellite-installer --scenario satellite --upgrade
```



### WARNING

If you run the command from a directory containing a **config** subdirectory, you will encounter the following error:

```
ERROR: Scenario (config/satellite.yaml) was not
found, can not continue.
```

In such a case, change directory, for example to the **root** user's home directory, and run the command again.

12. Check and restore any changes required to the DNS and DHCP configuration files using the backups made earlier.

13. If you made changes in the previous step, restart Katello services.

```
# katello-service restart
```

14. 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
```

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

## 2.5. UPGRADING CAPSULE SERVERS

This section describes how to upgrade Capsule Servers.

### Before You Begin

- You must upgrade Satellite Server before you can upgrade any Capsule Servers.
- The Capsule Server must be on minor version 6.2.11 at a minimum. If the Capsule Server is on Red Hat Enterprise Linux 6, the minimum version is 6.2.13. Direct upgrades from earlier minor versions are not supported. For more information, see [Upgrading Between Minor Versions of Satellite](#) in the *Red Hat Satellite 6.2 Installation Guide*.
- Ensure the Red Hat Satellite Capsule 6.3 repository is enabled in Satellite Server and synchronized.
- If you use Content Views to control updates to a Capsule Server's base operating system, or for the Capsule Server repository, you must publish updated versions of those Content Views.
- 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 additional information, see the [Ports and Firewalls Requirements](#) section of the *Red Hat Satellite Installation Guide*.



### 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 [Backup and Disaster Recovery](#) in the *Red Hat Satellite 6.2 Server Administration Guide*.

2. Back up the DNS and DHCP configuration files `/etc/zones.conf` and `/etc/dhcp/dhcpd.conf` as the installer only supports one domain or subnet, and therefore restoring changes from these backups might be required.
3. If you have made manual edits to DNS or DHCP configuration files and do not want the changes overwritten, enter the following command.

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

4. Disable the repository for Red Hat Satellite 6.2.

```
# subscription-manager repos \
--disable rhel-7-server-satellite-capsule-6.2-rpms
```

5. Enable the new repositories.

The Red Hat Software Collections repository provides a later version of Ruby required by some Red Hat Satellite features, including the Remote Execution feature. The Satellite tools repository provides **gofer** and **katello-agent** which provide communication services for managing Errata.

- Enter the following command:

```
# subscription-manager repos \
--enable rhel-7-server-satellite-capsule-6.3-rpms \
--enable rhel-server-rhsc1-7-rpms \
--enable rhel-7-server-satellite-tools-6.3-rpms
```

6. In the Satellite web UI, go to **Hosts > Discovered hosts**. If there are discovered hosts available, power off the hosts 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.

7. Clear the repository cache.

```
# yum clean all
```

8. Stop Katello services.

```
# katello-service stop
```

9. Update all packages.

```
# yum update
```

10. On Satellite Server, generate an archive with new certificates and update the certificate bundle:

- If you use Satellite certificates, enter the following command:

```
# capsule-certs-generate \
```

```
--foreman-proxy-fqdn mycapsule.example.com \
--certs-tar mycapsule.example.com-certs.tar \
--certs-update-all
```

You should replace **mycapsule.example.com** with the fully qualified domain name of the Capsule Server.

- If you implement custom certificates, enter the following command:

```
# capsule-certs-generate \
--foreman-proxy-fqdn mycapsule.example.com \ ❶
--certs-tar /root/capsule_cert/capsule_certs.tar \ ❷
--server-cert /root/capsule_cert/capsule_cert.pem \ ❸
--server-cert-req /root/capsule_cert/capsule_cert_csr.pem \ ❹
--server-key /root/capsule_cert/capsule_cert_key.pem \ ❺
--server-ca-cert /root/sat_cert/ca_cert_bundle.pem \ ❻
--certs-update-all --certs-update-server-ca
```

- ❶ The fully qualified domain name of Capsule Server.
- ❷ Path to the tar file with the certificate archive that this command generates.
- ❸ Path to Capsule Server certificate file.
- ❹ Path to Capsule Server certificate signing request file.
- ❺ Path to Capsule Server private key file.
- ❻ Path to Certificate Authority bundle.

11. Copy the archive file to the Capsule Server.

```
# scp mycapsule.example.com-certs.tar mycapsule.example.com:~/
```



### WARNING

Do not remove the certificate archive file after the upgrade, it is required for future updates.

12. If you plan to use Capsule Server as a proxy for discovered hosts, install the Discovery plug-in.

```
# yum install rubygem-smart_proxy_discovery.noarch
```

13. On the Capsule Server, verify that the **foreman\_url** setting is correct.

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

The fully qualified domain name of the Satellite Server should display.

14. Perform the upgrade by running the installer script with the **--upgrade** option, and specify the path to the certificate archive previously created on the Satellite Server. Additionally, as the **--certs-update-all** option was used above when generating the certificate archive, the following three command options are also required to regenerate the NSS database and deploy the updated certificate bundle: **--certs-regenerate true** and **--certs-deploy true** and **--certs-update-all**.

```
# satellite-installer --scenario capsule --upgrade \
--foreman-proxy-content-certs-tar mycapsule.example.com-certs.tar \
--certs-update-all --certs-regenerate true --certs-deploy true
```



### WARNING

If you run the command from a directory containing a **config** subdirectory, you will encounter the following error:

```
ERROR: Scenario (config/capsule.yaml) was not found,
can not continue.
```

In such a case, change directory, for example to the **root** user's home directory, and run the command again.

15. Check and restore any changes required to the DNS and DHCP configuration files using the backups made earlier.
16. Upgrade the foreman-discovery package on Satellite Server and turn on the hosts that were shut down prior to the upgrade.

## 2.6. 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.

### 2.6.1. Upgrading Discovery

This section describes updating the PXELinux template and the boot image passed to hosts that use PXE booting to register themselves with Satellite Server. This procedure is not required if you do not use PXE booting of hosts to enable Satellite to discover new hosts.

#### 2.6.1.1. Upgrading Discovery on Satellite Server

1. Update the Discovery template in the Satellite web UI:
  - a. 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. Navigate to **Administer > Settings**.
  - f. Locate **Global default PXELinux template** and click on its **Value**.
  - g. Select the name of the newly created template from the menu and click the tick button.
  - h. Navigate to **Hosts > Provisioning templates**.
  - i. Click **Build PXE Default**, then click **OK**.
2. In the Satellite web UI, go to **Configure > Discovery Rules** and associate selected organizations and locations with discovery rules.

### 2.6.1.2. Upgrading Discovery on Capsule Servers

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

```
# yum upgrade tfm-rubygem-foreman_discovery
```

2. If an update occurred in the previous step, restart Katello services.

```
# katello-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.

```
# yum upgrade foreman-discovery-image
```

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

```
# yum install 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.

### 2.6.2. Upgrading Satellite Clients

Currently, the Satellite 6.2 version of **katello-agent** and other client libraries in the Satellite Tools repository are not formally tested or supported against Satellite 6.3. Packages can still be installed on clients but errata cannot be installed without updating **katello-agent**.



Upgrade all clients to the new version of **katello-agent** as soon as possible so that your clients are fully compatible with Satellite Server. This requires changing the Satellite Tools repository from 6.2 to 6.3, which can be done manually or by installing the **satellite-6.3-tools-upgrade** package. This package only contains a post installation script to change the Satellite Tools repository version.

### Before You Begin

- You must have upgraded Satellite Server.
- You must have enabled the new Satellite Tools 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, use the manual method.



#### 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 Satellite Clients Using the **satellite-6.3-tools-upgrade** Package

1. In the Satellite web UI, navigate to **Hosts > Content Hosts** and select the Content Hosts to be upgraded.
2. From the **Select Action** list, select **Manage Packages**.
3. In the search field, enter the package name **satellite-6.3-tools-upgrade**.
4. From the **Install** list, select your preferred installation method. Wait for the message that the action has been successfully scheduled before proceeding to the next step.
5. In the search field, enter the package name **katello-agent**.
6. From the **Update** list, select your preferred update method. Wait for the message that the action has been successfully scheduled before proceeding to the next step.
7. Click **Done**.

### Upgrade Satellite Clients Manually

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-6.2-rpms
```

3. Enable the Satellite tools repository for this version of Satellite.

```
# subscription-manager repos \
--enable=rhel-7-server-satellite-tools-6.3-rpms
```

4. Upgrade the following **Katello**, **Pulp**, and **qpidd** packages.

```
# yum upgrade katello-agent katello-host-tools katello-host-tools-
fact-plugin pulp-rpm-handlers qpidd-proton-c
```

5. Restart **goferd**.

```
# systemctl restart goferd
```

### 2.6.3. Upgrading virt-who

If virt-who is installed on the Satellite or a Capsule Server, it will be upgraded as part of their upgrades. 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 the Satellite or a Capsule Server, first upgrade the host to the latest packages available in the Satellite Tools repository. For details see [Section 2.6.2, “Upgrading Satellite Clients”](#).

#### 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
```

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

After completing the upgrade to Satellite 6.3, the Red Hat Satellite Tools 6.2 repository can be removed from Content Views and then disabled.

Disable Version 6.2 of the Satellite Tools Repository:

1. In the Satellite web UI, go to **Content > Red Hat Repositories**.
2. Under the **RPM** tab, find and expand the **Product** Red Hat Enterprise Linux Server.
3. Find and expand the **Repository Set** Red Hat Satellite Tools 6.2 (for Red Hat Enterprise Linux 7 Server) (RPMs).
4. Unselect Red Hat Satellite Tools 6.2 for Red Hat Enterprise Linux 7 Server RPMs x86\_64.

If the check box is dimmed, then the repository is still contained in a Content View. The orphaned packages in the repository will be removed automatically by a scheduled task (cron job).

### 2.6.5. Updating the PXE loader options

Red Hat Satellite 6.3 adds support for the PXE booting of UEFI systems. When you upgrade to Satellite 6.3, your provisioned hosts have a new **PXE loader** option. On upgraded hosts, the **PXE loader** option might default to **none** and cause PXE-based provisioning to stop working. To ensure that your hosts continue to work, you must select either **PXELinux BIOS** or **PXELinux UEFI** from a new **PXE loader** option for your host.

To update your PXE booting system settings:

1. In the Satellite web UI, navigate to **Hosts > All hosts**.
2. On the host that you want to update, click **Edit**.
3. In the upper-right of the **Edit** page, select **Manage host**.
4. Select the **Operating System** tab.
5. From the **PXE loader** list, select the method of PXE booting that you want.
6. Click **Submit** to save.

### 2.6.6. Updating Templates

Cloned or custom templates in 6.2 that contain Ruby's **to\_proc** syntax, for example **(1..3).collect(&:to\_s)**, do not work in Satellite 6.3 due to security improvements. You must write the same code as a full Ruby block: **(1..3).collect {|num| num.to\_s}**.

1. Search for affected lines containing **&:**.
2. Replace strings in the form **your\_code(&:your\_code)** with **your\_code{|i| i.your\_code}**.

Use the following two examples as a guide:

Ruby syntax in 6.2 cloned template:

```
<% host_param('ssh_authorized_keys').split(',').map(&:strip).each do
|ssh_key| -%>
```

Updated Ruby syntax for Satellite 6.3:

```
<% host_param('ssh_authorized_keys').split(',').map{ |item| item.strip
}.each do |ssh_key| -%>
```

Ruby syntax in 6.2 cloned template:

```
nameserver=#{[subnet.dns_primary,
subnet.dns_secondary].select(&:present?).join(',')}
```

Updated Ruby syntax for Satellite 6.3:

-

```
nameserver=#{[subnet.dns_primary, subnet.dns_secondary].select{ |item|
item.present? }.join(',')}
```

### 2.6.6.1. Provisioning Templates

Previously, the Ruby expression `<%= foreman_url %>` was used in provisioning templates as part of the command to notify Satellite that the build is done. In 6.3, the templates use `<%= foreman_url('built') %>`, which explicitly calls the built template.

If you cloned or created custom provisioning templates in 6.2, search your templates for the lines:

```
curl -s -o /dev/null --insecure <%= foreman_url %>
wget -q -O /dev/null --no-check-certificate <%= foreman_url %>
```

Replace the expression:

```
<%= foreman_url %>
```

with:

```
<%= foreman_url('built') %>
```

### 2.6.7. Upgrading the External DHCP Service

If using an external DHCP server, you need to configure **satellite-installer** to use the **remote\_isc** DHCP provider as opposed to the **isc** DHCP provider that is used in Satellite 6.2. Use the following sections to configure the external DHCP service on Satellite 6.3:

- [Configuring Satellite Server with External DHCP](#) in the *Installation Guide*.
- [Configuring Capsule Server with External DHCP](#) in the *Installation Guide*.

## CHAPTER 3. UPGRADING PUPPET

Red Hat Satellite 6.3 uses Puppet 3 by default, but you can also upgrade to Puppet 4. Satellite 6.4 will support only Puppet 5. The migration path for Puppet 5 supports only Puppet 4 to Puppet 5 migrations. Therefore if you are using a version of Puppet prior to version 4, you must upgrade to Puppet 4 prior to upgrading to Satellite 6.4. Satellite 6.3 includes an upgrade path to Puppet 4, and Red Hat recommends you do it now to prepare for your next upgrade. This chapter describes the process of upgrading to Puppet 4.

### 3.1. UPGRADE PATH

Before upgrading to Puppet 4, you must first review your Puppet modules, and make changes, to ensure they are compatible with Puppet 4 before upgrading Puppet. For example, if the client has blank configuration values after running the Puppet agent, updating Puppet modules is indicated.

Red Hat Satellite and Capsules do not have to be upgraded to Puppet 4 at the same time. You have the flexibility to upgrade Capsules depending on your progress with testing and upgrading Puppet modules. An alternative is to install new Capsules and move hosts to them after testing. You can use Satellite web UI, the Hammer CLI, or the **bootstrap** script to move hosts from a Puppet 3 Capsule to a Puppet 4 Capsule.

Cloning an existing Capsule to use for final testing of upgraded Puppet modules is also recommended. Cloning an existing Capsule can take a long time depending on the size of the repositories.

You must install the Puppet 4 agent on the hosts for full functionality, but hosts must not be upgraded to Puppet 4 agent before their Capsule is upgraded to Puppet 4. For more information about installing Puppet agent, see [Installing the Puppet Agent](#).

#### Using Parameters to Determine Puppet Versions

You can configure Satellite to install the Puppet 4 agent instead of the Puppet 3 agent during host provisioning. The Kickstart template file has the parameter **enable-puppet4**; if set to **true**, the provisioning template installs the Puppet 4 agent and configures **puppet.conf** in the **/etc/puppetlabs/puppet/** directory. If the parameter is not defined, Puppet 3 agent is installed.

To enforce Puppet 4 for hosts, create a parameter at the host group level with name **enable-puppet4** and set its value to **true**.

1. In the web UI, navigate to **Configure > Host Groups** and select the name of the host group you want to configure.
2. Click the **Parameters** tab, and in the **Host Group Parameters** area, click **Add Parameter**.
3. In the **Name** field, enter **enable - puppet4** and in the **Value** field, enter **true**.
4. Click **Submit** to save the changes.

### 3.2. TESTING PUPPET MODULES

Use the following guidelines to test your Puppet modules before you begin upgrading:

1. Test Puppet modules first on a workstation, separate from Satellite.
2. Check the command syntax using the **puppet parser validate** command.

3. Configure the Satellite Capsules running Puppet 3 to use the future parser and test again. To enable this feature, run the Satellite installer with the option **--puppet-server-parser future**.

The future parser in Puppet 3.8 enables functionality identical to the Puppet language used in Puppet 4.0. After enabling it, check the logs in **/var/log/puppet/** for errors. If you find errors, correct them and test again. See the [Puppet 3.8 Reference Manual](#) for information on the future parser.

### 3.3. PERFORMING THE UPGRADE

Use this section to upgrade a Satellite or Capsule to Puppet 4. For a new installation, see the [Red Hat Satellite Installation Guide](#).

#### Before You Begin

- Ensure you complete the upgrade to Satellite 6.3.
- Review your Puppet modules and upgrade where required to Puppet 4.
- Ensure all hosts connected to the system that you want to upgrade have the latest Puppet 3 agent and not version 4. You must not upgrade hosts to Puppet 4 agent before their Capsule. The Satellite tools repository supplies the Puppet package. See [Section 2.6.2, “Upgrading Satellite Clients”](#) for more information.
- Create a backup or a snapshot of your system. For more information, see [Backing Up and Restoring Satellite Server and Capsule Server](#) in *Administering Red Hat Satellite*.

#### Upgrading Satellite or Capsule To Puppet 4

1. Enable the Puppet 4 repository:

- a. On a Satellite:

```
# subscription-manager repos \
--enable=rhel-7-server-satellite-6.3-puppet4-rpms
```

- b. On a Capsule:

```
# subscription-manager repos \
--enable=rhel-7-server-satellite-capsule-6.3-puppet4-rpms
```

2. Upgrade Puppet:

```
# satellite-installer --upgrade-puppet
```

#### Before You Begin

- Ensure the Puppet 4 repositories for your hosts are enabled in Satellite Server.
- Ensure your hosts associated Content Views have been updated to include the Puppet 4 agent.

The Puppet repositories for upgrading a host are Red Hat release and platform dependent, and sometimes also architecture dependent.

- The Puppet 4 repositories take the following form for desktop, server, and workstation:

```
rhel-X-platform-satellite-tools-6.3-puppet4-rpms
```

Where *X* is the major release version, and *platform* is **desktop**, **server**, or **workstation**.

- The Puppet 4 repositories take the following form for alternative architectures:

```
rhel-X-for-architecture-satellite-tools-6.3-puppet4-rpms
```

Where *X* is the major release version, and *architecture* is for example **arm**, **power**, **hpc-node**, or **system-z**. Some repositories are for subscriptions with extended support. For example, Extended Update Support (EUS) is indicated by **eus** after the architecture.

For more information about types of extended support, see the Red Hat Knowledgebase article [Red Hat Enterprise Linux - Top Support Policies](#).

1. On the content host, search for the Puppet 4 RPM repository:

```
# subscription-manager repos |grep puppet4
```

2. Enable the Puppet 4 repository suitable for the host, for example:

```
# subscription-manager repos \
--enable=rhel-7-server-satellite-tools-6.3-puppet4-rpms
```

3. Update all packages:

```
# yum update
```

4. Until Red Hat bug [Bug 1517624](#) has been resolved, perform these additional steps:

```
# cp -rp /var/lib/puppet/ssl /etc/puppetlabs/puppet/
# cp /etc/puppet/puppet.conf.rpmshare
/etc/puppetlabs/puppet/puppet.conf
# sed -i 's|/var/lib/puppet|/opt/puppetlabs/puppet/cache|'
/etc/puppetlabs/puppet/puppet.conf
# sed -i 's|/var/log/puppet|/var/log/puppetlabs/puppet|'
/etc/puppetlabs/puppet/puppet.conf
# sed -i 's|/var/run/puppet|/var/run/puppetlabs|'
/etc/puppetlabs/puppet/puppet.conf
# sed -i 's|$vardir/ssl|/etc/puppetlabs/puppet/ssl|'
/etc/puppetlabs/puppet/puppet.conf
```

## Post Upgrade Tasks

When you upgrade to Puppet 4, Puppet Server cannot function if the **noexec** bit is set on the temporary mount point that Java uses.

Complete the following steps to ensure that the **puppetserver** service can start correctly:

1. Open the **/etc/sysconfig/puppetserver** file for editing:

```
# vi /etc/sysconfig/puppetserver
```

2. In the `/etc/sysconfig/puppetserver` file, change `JAVA_ARGS="-Xms2G -Xmx2G -XX:MaxPermSize=256m"` to the following:

```
JAVA_ARGS="-Xms2G -Xmx2G -XX:MaxPermSize=256m -  
Djava.io.tmpdir=/var/tmp"
```

You can set the variable `/var/tmp` to the directory you prefer.

3. Open the `/etc/foreman-installer/custom-hiera.yaml` for editing:

```
# vi /etc/foreman-installer/custom-hiera.yaml
```

4. In the `/etc/foreman-installer/custom-hiera.yaml` file, add the following line to make your changes persistent across `satellite-installer` executions:

```
puppet::server_jvm_extra_args: '-XX:MaxPermSize=256m -  
Djava.io.tmpdir=/var/tmp'
```

You can set the variable `/var/tmp` to the directory you prefer.

5. Restart the `puppetserver` service:

```
# systemctl restart puppetserver
```

6. Verify that the `puppetserver` service is running:

```
# systemctl status puppetserver
```



## CHAPTER 4. UPDATING SATELLITE SERVER, CAPSULE SERVER, AND CONTENT HOSTS

Use this chapter to update your existing Red Hat Satellite environment to a new minor version of Red Hat Satellite, for example, from 6.3.0 to 6.3.1. For more information, see [Chapter 4, Updating Satellite Server, Capsule Server, and Content Hosts](#).

This chapter includes update procedures for Satellite Server, Capsule Server, and Content Hosts.

### Updating Between Minor Versions of Satellite

Updating is the process of migrating Satellite Server, Capsule Server, and Content Hosts to a new minor version. Updates typically patch security vulnerabilities and correct minor issues discovered after code is released. Generally speaking, updates require little time and are non-disruptive to your operating environment.

Before updating, check the [Red Hat Satellite Release Notes](#) for potential conflicts and backup your Satellite Server and all Capsule Servers. For more information, see [Backing Up and Restoring Satellite Server and Capsule Server](#) in *Administering Red Hat Satellite*.

Follow these procedures to update between minor versions, for example, from 6.3.0 to 6.3.1.

### 4.1. UPDATING SATELLITE SERVER

#### Prerequisites

- Ensure that you have synchronized Satellite Server repositories for Satellite, Capsule, and Satellite Tools.
- Ensure each external Capsule and Content Host can be updated by promoting the updated repositories to all relevant Content Views.
- If you have made changes to configuration files, manually or using a tool such as Hiera, they will be overwritten when the installation script is run 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:

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

2. Ensure **foreman-maintain** is installed and up to date:

```
# yum install rubygem-foreman_maintain
```

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

```
# foreman-maintain upgrade list-versions
```

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

```
# foreman-maintain upgrade check --target-version 6.3.z
```

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

5. Because of the lengthy update time, use a utility such as **screen** 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 about using the screen command, see [How do I use the screen command?](#) article in the *Red Hat Knowledge Base*.

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.

6. Perform the upgrade:

```
# foreman-maintain upgrade run --target-version 6.3.z
```

7. Check to see if any of the kernel packages were updated since you last rebooted the system:

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

8. If a kernel update occurred since you last rebooted the system, reboot the system:

```
# reboot
```

## 4.2. UPDATING CAPSULE SERVER

### Updating Capsule Servers to the Next Minor Version

#### To Update a Capsule Server:

1. Check that only the correct repositories are enabled:

- a. List the enabled repositories:

```
# subscription-manager repos --list-enabled
```

- b. Ensure that you only have the following repositories enabled:

```
rhel-7-server-rpms
rhel-7-server-satellite-capsule-6.3-rpms
rhel-server-rhsc1-7-rpms
rhel-7-server-satellite-tools-6.3-rpms
```

If required, see the [Configuring Repositories](#) section of the *Red Hat Satellite Installation Guide* for more information on disabling and enabling repositories. The **rhel-7-server-satellite-tools-6.3-rpms** repository provides Katello Agent. If required, see the [Installing the katello Agent](#) section of the *Red Hat Satellite Installation Guide* for more information. The Red Hat Software Collections repository is optional, it is required for the Remote Execution feature.

2. Stop Katello services:

```
# katello-service stop
```

3. Update all packages:

```
# yum update
```

If a kernel update occurs, make a note to reboot **after** the upgrade is complete. Do **not** reboot at this point.

4. Perform the update by running the installer script with the **--upgrade** option.

```
# satellite-installer --scenario capsule --upgrade
```

5. If a kernel update occurred during the **yum update** step, reboot the system:

```
# reboot
```

6. If you did not reboot the system in the previous step, restart **goferd**:

```
# systemctl restart goferd
```

## 4.3. UPDATING CONTENT HOSTS

### Updating Content Hosts to the Next Minor Version

**To Update a Content Host, enter the following commands:**

1. Update all packages:

```
# yum update
```

2. If a kernel update occurs, reboot the system:

```
# reboot
```

3. If you did not reboot the system in the previous step, restart **goferd**:

```
# systemctl restart goferd
```