



Red Hat Satellite 6.12

Upgrading and Updating Red Hat Satellite

Upgrading and updating Red Hat Satellite Server and Capsule Server

Red Hat Satellite 6.12 Upgrading and Updating Red Hat Satellite

Upgrading and updating Red Hat Satellite Server and Capsule Server

Red Hat Satellite Documentation Team

satellite-doc-list@redhat.com

Legal Notice

Copyright © 2023 Red Hat, Inc.

The text of and illustrations in this document are licensed by Red Hat under a Creative Commons Attribution–Share Alike 3.0 Unported license ("CC-BY-SA"). An explanation of CC-BY-SA is available at

<http://creativecommons.org/licenses/by-sa/3.0/>

. In accordance with CC-BY-SA, if you distribute this document or an adaptation of it, you must provide the URL for the original version.

Red Hat, as the licensor of this document, waives the right to enforce, and agrees not to assert, Section 4d of CC-BY-SA to the fullest extent permitted by applicable law.

Red Hat, Red Hat Enterprise Linux, the Shadowman logo, the Red Hat logo, JBoss, OpenShift, Fedora, the Infinity logo, and RHCE are trademarks of Red Hat, Inc., registered in the United States and other countries.

Linux[®] is the registered trademark of Linus Torvalds in the United States and other countries.

Java[®] is a registered trademark of Oracle and/or its affiliates.

XFS[®] is a trademark of Silicon Graphics International Corp. or its subsidiaries in the United States and/or other countries.

MySQL[®] is a registered trademark of MySQL AB in the United States, the European Union and other countries.

Node.js[®] is an official trademark of Joyent. Red Hat is not formally related to or endorsed by the official Joyent Node.js open source or commercial project.

The OpenStack[®] Word Mark and OpenStack logo are either registered trademarks/service marks or trademarks/service marks of the OpenStack Foundation, in the United States and other countries and are used with the OpenStack Foundation's permission. We are not affiliated with, endorsed or sponsored by the OpenStack Foundation, or the OpenStack community.

All other trademarks are the property of their respective owners.

Abstract

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

Table of Contents

PREFACE	3
CHAPTER 1. UPGRADING OVERVIEW	4
1.1. PREREQUISITES	4
1.2. UPGRADE PATHS	5
1.3. FOLLOWING THE PROGRESS OF THE UPGRADE	5
1.4. UPGRADING CAPSULES SEPARATELY FROM SATELLITE	5
CHAPTER 2. CLONING SATELLITE SERVER	7
2.1. CLONING PROCESS OVERVIEW	7
2.2. PREREQUISITES	7
2.3. PULP DATA CONSIDERATIONS	8
2.4. CLONING SATELLITE SERVER	8
2.4.1. Preparing the source server for cloning	8
2.4.2. Cloning to the Target Server	9
CHAPTER 3. UPGRADING RED HAT SATELLITE	11
3.1. UPGRADING SATELLITE SERVER	11
3.1.1. Upgrading a Connected Satellite Server	12
3.1.2. Upgrading a Disconnected Satellite Server	14
3.2. SYNCHRONIZING THE NEW REPOSITORIES	19
3.3. UPGRADING CAPSULE SERVERS	20
3.4. UPGRADING THE EXTERNAL DATABASE	22
3.5. PERFORMING POST-UPGRADE TASKS	22
3.5.1. Upgrading Discovery	23
3.5.1.1. Upgrading Discovery on Satellite Server	23
3.5.1.2. Verifying Subnets have a Template Capsule	24
3.5.2. Upgrading virt-who	24
3.5.3. Removing the Previous Version of the Satellite Tools Repository	24
3.5.4. Migrating Ansible Content	25
3.5.5. Reclaiming PostgreSQL Space	25
3.5.6. Tuning Satellite Server with Predefined Profiles	26
CHAPTER 4. UPDATING SATELLITE SERVER, CAPSULE SERVER, AND CONTENT HOSTS	28
4.1. UPDATING SATELLITE SERVER	28
4.2. UPDATING DISCONNECTED SATELLITE SERVER	29
4.3. UPDATING CAPSULE SERVER	32

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 6.11 to Satellite 6.12. 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 6.12.0 to Satellite 6.12.1. For more information, see [Chapter 4, *Updating Satellite Server, Capsule Server, and Content Hosts*](#).

Migrating

The process of moving an existing Satellite installation to a new instance.

CHAPTER 1. UPGRADING OVERVIEW

Review prerequisites and available upgrade paths below before upgrading your current Red Hat Satellite installation to Red Hat Satellite 6.12.

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 6.12 affects your entire Satellite infrastructure. Before proceeding, complete the following:

- Read the Red Hat Satellite 6.12 [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 in a Connected Network Environment* 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 *Administering Red Hat Satellite*.
- Plan for updating any scripts you use that contain Satellite API commands because some API commands differ between versions of Satellite.



NOTE

Satellite 6.12 is released only on Red Hat Enterprise Linux 8. If you are running Satellite 6.11 on Red Hat Enterprise Linux 7, you must upgrade to Red Hat Enterprise Linux 8 before you can upgrade to Satellite 6.12. For more information about upgrading from Red Hat Enterprise Linux 7 to Red Hat Enterprise Linux 8, see [Upgrading Satellite or Capsule 6.11 to Red Hat Enterprise Linux 8 In-Place Using Leapp](#).

Ensure that all Satellite Servers are on the same version.



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](#).

1.2. UPGRADE PATHS

You can upgrade to Red Hat Satellite 6.12 from Red Hat Satellite 6.11.

Satellite Servers and Capsule Servers on earlier versions must first be upgraded to Satellite 6.11. For more information, see the [Upgrading and Updating Red Hat Satellite to 6.11](#).

High-Level Upgrade Steps

The high-level steps in upgrading Satellite to 6.12 are as follows:

1. Optional: Clone your existing Satellite Servers. For more information, see [Chapter 2, Cloning Satellite Server](#).
2. Upgrade Satellite Server to 6.12. For more information, see [Section 3.1, "Upgrading Satellite Server"](#).
3. Upgrade all Capsule Servers to 6.12. For more information, see [Section 3.3, "Upgrading Capsule Servers"](#).
4. Continue with [Section 3.5, "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 6.12 and keep Capsules at version 6.11 until you have the capacity to upgrade them too.

All the functionality that worked previously works on 6.11 Capsules. However, the functionality added in the 6.12 release will not work until you upgrade Capsules to 6.12.

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

When you upgrade Satellite Server, you can optionally create and upgrade a clone of your Satellite to ensure that you do not lose any data while you upgrade. After your upgrade is complete, you can then decommission the earlier version of Satellite Server.

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 8. Instead, you must backup the existing Capsule Server, restore it on Red Hat Enterprise Linux 8, and 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 8 to become the target server. Do not install Red Hat Enterprise Linux 8 software groups or third-party applications. Ensure that your server complies with all the required specifications. For more information, see [Preparing your Environment for Installation](#) in *Installing Satellite Server in a Connected Network Environment*.
- A backup from Satellite 6.11 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 \  
--assumeyes /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 --assumeyes /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-8-for-x86_64-appstream-rpms \
--enable=satellite-6.11-for-rhel-8-x86_64-rpms \
--enable=satellite-maintenance-6.11-for-rhel-8-x86_64-rpms
```

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

```
# dnf 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 in a Connected Network Environment*.
9. Enable remote execution:

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

10. Log in 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 *Administering 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



WARNING

If you have Satellite installed in a high availability configuration, contact Red Hat Support before upgrading to Satellite 6.12.

Use the following procedures to upgrade your existing Red Hat Satellite to Red Hat Satellite 6.12:

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 3.5, “Performing Post-Upgrade Tasks”](#)

3.1. UPGRADING SATELLITE SERVER

This section describes how to upgrade Satellite Server from 6.11 to 6.12. You can upgrade from any minor version of Satellite Server 6.11.

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 in a Connected 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.
- 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 6.11 to 6.12 can use Capsule Servers still at 6.11.

**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 in a Connected Network Environment*.

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. Create a backup.

- On a virtual machine, take a snapshot.
 - On a physical machine, create a backup.
For more information about backups, see [Backing Up Satellite Server and Capsule Server](#) in *Administering Red Hat Satellite*.
2. 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.
 3. 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
```

4. 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.
5. In the current upgrade process, you must enable the Satellite 6.12 (or Capsule) repository to restrict any updates outside the Satellite Maintenance repository. Please read the [Known Issues](#) in the Release Notes as a workaround before proceeding further.
Enable the Satellite Maintenance repository and the Satellite 6.12 repositories:

```
# subscription-manager repos \
--enable satellite-maintenance-6.12-for-rhel-8-x86_64-rpms \
--enable satellite-6.12-for-rhel-8-x86_64-rpms
```

If the Satellite 6.11 system was upgraded from Red Hat Enterprise Linux 7 to Red Hat Enterprise Linux 8 using Leapp, manually enable the Satellite module:

```
# dnf module enable satellite:el8
```

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

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

7. 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 6.12
```

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

8. 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.

9. Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.12
```

10. 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
```

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

```
# reboot
```

12. 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.
- All Satellite Servers must be on the same version.

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
```

3. 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.
4. 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
```

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. Remove old repositories:

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

8. Stop Satellite services:

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

9. Obtain the latest ISO files by following the [Downloading the Binary DVD Images](#) procedure in *Installing Satellite Server in a Disconnected Network Environment* .
10. Create directories to serve as a mount point, mount the ISO images, and configure the **rhel8** repository by following the [Configuring the Base Operating System with Offline Repositories in RHEL 8](#) procedure in *Installing Satellite Server in a Disconnected Network Environment* . Do not install or update any packages at this stage.
11. Configure the Satellite 6.12 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/sat6.repo
```

- i. Change the default **InstallMedia** repository name to **Satellite-6.12**:

```
[Satellite-6.12]
```

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

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

12. 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/
```

13. 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/
```

14. 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/RHSCCL/media.repo /etc/yum.repos.d/RHSCCL.repo
```

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

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

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

```
[RHSCL]
```

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

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

15. 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.

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

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

17. 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 6.12 \
--whitelist="repositories-validate,repositories-setup"
```

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

18. Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.12 \
--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*.

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

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

20. Check when the kernel packages were last updated:

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

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

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

22. 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.
23. If you make changes in the previous step, restart Satellite services:

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

24. 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
```

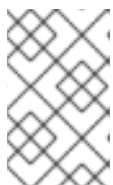
25. In the Satellite web UI, go to **Configure** > **Discovery Rules** and associate selected organizations and locations with discovery rules.

3.2. SYNCHRONIZING THE NEW REPOSITORIES

You must enable and synchronize the new 6.12 repositories before you can upgrade Capsule Servers and Satellite clients.

Procedure

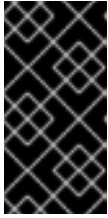
1. In the Satellite web UI, navigate to **Content** > **Red Hat Repositories**.
2. Toggle the **Recommended Repositories** switch to the **On** position.
3. From the list of results, expand the following repositories and click the **Enable** icon to enable the repositories:
 - To upgrade Satellite clients, 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 6.12 (for RHEL 8 x86_64) (RPMs)**
 - Red Hat Satellite Maintenance 6.12 (for RHEL 8 x86_64) (RPMs)**
 - Red Hat Enterprise Linux 8 (for x86_64 – BaseOS) (RPMs)**
 - Red Hat Enterprise Linux 8 (for x86_64 – AppStream) (RPMs)**



NOTE

If the 6.12 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 6.12. Note that **Red Hat Satellite Client 6** does not have a 6.12 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 *Managing Content*.

3.3. UPGRADING CAPSULE SERVERS

This section describes how to upgrade Capsule Servers from 6.11 to 6.12.

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 6.12 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 and publish their updated versions. For more information, see [Managing Content Views](#) in *Managing Content*.
- 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 Administering Red Hat Satellite](#).

2. Clean yum cache:

```
# yum clean metadata
```

3. The **rubygem-foreman_maintain** is installed from the Satellite Maintenance repository or upgraded from the Satellite Maintenance repository if currently installed.
In the current upgrade process, you must enable the Satellite 6.12 (or Capsule) repository to restrict any updates outside the Satellite Maintenance repository. Please read the [Known Issues](#) in the Release Notes as a workaround before proceeding further.

Ensure Capsule has access to **satellite-maintenance-6.12-for-rhel-8-x86_64-rpms** and execute:

```
# subscription-manager repos --enable \
satellite-capsule-6.12-for-rhel-8-x86_64-rpms

# satellite-maintain self-upgrade
```

If the Capsule 6.11 system was upgraded from Red Hat Enterprise Linux 7 to Red Hat Enterprise Linux 8 using Leapp, manually enable the Capsule module:

```
# dnf module enable satellite-capsule:el8
```

4. On Capsule Server, verify that the **foreman_url** setting points to the Satellite FQDN:

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

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

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

6. 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.

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

```
# satellite-maintain upgrade check --target-version 6.12
```

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

8. Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.12
```

9. Check when the kernel packages were last updated:

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

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

```
# reboot
```

11. 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.
12. Optional: If you use custom repositories, ensure that you enable these custom repositories after the upgrade completes.

3.4. 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 6.11 to 6.12.

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
```

3.5. 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.

- [Section 3.5.1, “Upgrading Discovery”](#)
- [Section 3.5.2, “Upgrading virt-who”](#)
- [Section 3.5.3, “Removing the Previous Version of the Satellite Tools Repository”](#)

- [Section 3.5.4, “Migrating Ansible Content”](#)
- [Section 3.5.5, “Reclaiming PostgreSQL Space”](#)
- [Section 3.5.6, “Tuning Satellite Server with Predefined Profiles”](#)

3.5.1. 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 6.12, 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.

3.5.1.1. 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.

3.5.1.2. Verifying Subnets have a Template Capsule

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 *Provisioning Hosts*.

3.5.2. 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.

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
```

3.5.3. Removing the Previous Version of the Satellite Tools Repository

After completing the upgrade to Satellite 6.12, the Red Hat Satellite Tools 6.11 repository can be removed from Content Views and then disabled.

Disable Version 6.11 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 6.11 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.

3.5.4. 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](#)

3.5.5. 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
```

3.5.6. 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. UPDATING SATELLITE SERVER, CAPSULE SERVER, AND CONTENT HOSTS

Use this chapter to update your existing Satellite Server, Capsule Server, and Content Hosts to a new patch version, for example, from 6.12.0 to 6.12.1.

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 *Administering Red Hat Satellite*.

4.1. 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 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](#).

Updating Satellite Server to the Next Minor Version

To Update Satellite Server:

1. Ensure the Satellite Maintenance repository is enabled:

```
# subscription-manager repos --enable \  
satellite-maintenance-6.12-for-rhel-8-x86_64-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. 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 6.12.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/satellite.log` file to check if the process completed successfully.

5. Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.12.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
```

4.2. 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.

Complete the following steps on the connected Satellite Server.

1. 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-6.12-for-rhel-8-x86_64-rpms
satellite-maintenance-6.12-for-rhel-8-x86_64-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-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-6.12-for-rhel-8-x86_64-rpms]
name=Red Hat Satellite 6.12 for RHEL 8 RPMs x86_64
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/layered
rhel8/x86_64/satellite/6.12/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-6.12-for-rhel-8-x86_64-rpms]
name=Red Hat Satellite Maintenance 6.12 for RHEL 8 RPMs x86_64
baseurl=https://satellite.example.com/pulp/content/My_Organization/Library/content/dist/layered
rhel8/x86_64/sat-maintenance/6.12/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 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:

```
# 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-6.12-for-rhel-8-x86_64-rpms \
-r satellite-maintenance-6.12-for-rhel-8-x86_64-rpms
```

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

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 xzf Satellite-repos.tgz
```

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

```
[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-6.12-for-rhel-8-x86_64-rpms]
name=Red Hat Satellite 6 for RHEL 8 Server RPMs x86_64
baseurl=file:///root/Satellite-repos/satellite-6.12-for-rhel-8-x86_64-rpms
enabled=1

[satellite-maintenance-6.12-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-6.12-for-rhel-8-x86_64-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 6.12.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-validate"
--target-version 6.12.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
```

4.3. 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 \
satellite-maintenance-6.12-for-rhel-8-x86_64-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 6.12.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 6.12.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
```