



# Red Hat Satellite 6.14

## Upgrading Red Hat Satellite to 6.14

Upgrade Satellite Server and Capsule



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Upgrade Satellite Server and Capsule

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## Abstract

This guide describes how to upgrade Red Hat Satellite Server, both connected and disconnected, and Capsule Server.

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

## Procedure

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

# CHAPTER 1. UPGRADING OVERVIEW

Review prerequisites and available upgrade paths below before upgrading your current Red Hat Satellite installation to Red Hat Satellite 6.14.

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

- Read the Red Hat Satellite 6.14 [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.

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 maintenance script runs during upgrading or updating. You can use the **--noop** option with the `satellite-installer` 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 6.14 from Red Hat Satellite 6.13.

Satellite Servers and Capsule Servers on earlier versions must first be upgraded to Satellite 6.13. For more information, see [Upgrading and Updating Red Hat Satellite to 6.13](#).

### High-Level Upgrade Steps

The high-level steps in upgrading Satellite to 6.14 are as follows:

1. Upgrade Satellite Server to 6.14. For more information, see [Section 2.1, “Upgrading Satellite Server”](#).
2. Upgrade all Capsule Servers to 6.14. For more information, see [Section 2.6, “Upgrading Capsule Servers”](#).

## 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 6.14 and keep Capsules at version 6.13 until you have the capacity to upgrade them too.

All the functionality that worked previously works on 6.13 Capsules. However, the functionality added in the 6.14 release will not work until you upgrade Capsules to 6.14.

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. UPGRADING RED HAT SATELLITE

Use the following procedures to upgrade your existing Red Hat Satellite to Red Hat Satellite 6.14:

1. Review [Section 1.1, “Prerequisites”](#).
2. [Section 2.1, “Upgrading Satellite Server”](#)
3. [Section 2.4, “Synchronizing the New Repositories”](#)
4. [Section 2.6, “Upgrading Capsule Servers”](#)

### 2.1. UPGRADING SATELLITE SERVER

This section describes how to upgrade Satellite Server from 6.13 to 6.14. You can upgrade from any minor version of Satellite Server 6.13.

#### 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 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 6.13 to 6.14 can use Capsule Servers still at 6.13.

**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 2.2, “Upgrading a Connected Satellite Server”](#).
- To upgrade a Satellite Server not connected to the Red Hat Content Delivery Network, proceed to [Section 2.3, “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*.

**2.2. 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 maintenance script runs during upgrading or updating. You can use the **--noop** option with the `satellite-installer` to test for changes. For more information, see the Red Hat Knowledgebase solution [How to use the noop option to check for changes in Satellite config files during an upgrade](#).

**Upgrade Satellite Server**

1. Stop all Satellite services:



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

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

3. Start all Satellite services:

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

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

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

6. Optional: If you use PostgreSQL as an external database
  - a. Install the **postgresql-contrib** package on the PostgreSQL server:

```
# dnf install postgresql-contrib
```

- b. Connect to the Pulp database:

```
# su - postgres -c "psql pulpcore"
```

- c. Create the **hstore** extension:

```
pulpcore=# CREATE EXTENSION IF NOT EXISTS "hstore";
CREATE EXTENSION
```

7. 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.

8. Ensure that the Satellite Maintenance repository is enabled:

```
# subscription-manager repos --enable \
satellite-maintenance-6.14-for-rhel-8-x86_64-rpms
```

9. Enable the maintenance module:

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

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

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

11. 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 6.14
```

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

12. 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.

13. Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.14
```

14. Determine if the system needs a reboot:

```
# dnf needs-restarting --reboothint
```

15. Optional: If the previous command told you to reboot, then reboot the system:

```
# reboot
```

## 2.3. 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. Stop all Satellite services:

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

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

3. Start all Satellite services:

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

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

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

6. Optional: If you use PostgreSQL as an external database
  - a. Install the **postgresql-contrib** package on the PostgreSQL server:

```
# dnf install postgresql-contrib
```

- b. Connect to the Pulp database:

```
# su - postgres -c "psql pulpcore"
```

- c. Create the **hstore** extension:

```
pulpcore=# CREATE EXTENSION IF NOT EXISTS "hstore";
CREATE EXTENSION
```

7. In the Satellite web UI, navigate to **Hosts > Discovered hosts**. If there are discovered hosts available, turn them off and then delete all entries under the **Discovered hosts** page. Select all other organizations in turn using the organization setting menu and repeat this action as required. Reboot these hosts after the upgrade has completed.

8. Remove old repositories:

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

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 6.14 repository from the ISO file.

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

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

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

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

- i. Change the default **InstallMedia** repository name to **Satellite-6.14**:

```
[Satellite-6.14]
```

- 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. Enable the maintenance module:

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

14. 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.

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

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

16. 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 6.14 \
--whitelist="repositories-validate,repositories-setup"
```

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



17. Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.14 \
--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*.

18. Determine if the system needs a reboot:

```
# dnf needs-restarting --reboothint
```

19. Optional: If the previous command told you to reboot, then reboot the system:

```
# reboot
```

20. 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.

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

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

22. 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
```

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

## 2.4. SYNCHRONIZING THE NEW REPOSITORIES

You must enable and synchronize the new 6.14 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 6.14 (for RHEL 8 x86\_64) (RPMs)**
    - Red Hat Satellite Maintenance 6.14 (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 6.14 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 6.14. Note that **Red Hat Satellite Client 6** does not have a 6.14 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*.

## 2.5. PERFORMING POST-UPGRADE TASKS

Optional: If the default provisioning templates have been changed during the upgrade, recreate any templates cloned from the default templates. If the custom code is executed before and/or after the provisioning process, use custom provisioning snippets to avoid recreating cloned templates. For more information about configuring custom provisioning snippets, see [Creating Custom Provisioning Snippets](#) in *Provisioning Hosts*.

## 2.6. UPGRADING CAPSULE SERVERS

This section describes how to upgrade Capsule Servers from 6.13 to 6.14.

### 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 6.14 repository is enabled in Satellite Server and synchronized.
- Ensure that you synchronize the required repositories on Satellite Server. For more information, see [Section 2.4, “Synchronizing the New Repositories”](#).

- If you use Content Views to control updates to the base operating system of Capsule Server, update those Content Views with new repositories, publish, and promote their updated versions. For more information, see [Managing Content Views](#) in *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. Synchronize the **satellite-capsule-6.14-for-rhel-8-x86\_64-rpms** repository in the Satellite Server.
4. Publish and promote a new version of the content view with which the Capsule is registered.
5. The **rubygem-foreman\_maintain** is installed from the Satellite Maintenance repository or upgraded from the Satellite Maintenance repository if currently installed.  
Ensure Capsule has access to **satellite-maintenance-6.14-for-rhel-8-x86\_64-rpms** and execute:

```
# satellite-maintain self-upgrade
```

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

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

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

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

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/capsule.log** file to check if the process completed successfully.

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

```
# satellite-maintain upgrade check --target-version 6.14
```

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

10. Perform the upgrade:

```
# satellite-maintain upgrade run --target-version 6.14
```

11. Determine if the system needs a reboot:

```
# dnf needs-restarting --reboothint
```

12. Optional: If the previous command told you to reboot, then reboot the system:

```
# reboot
```

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

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

## Upgrading Capsule Servers using remote execution

1. Create a backup or take a snapshot.  
For more information on backups, see [Backing Up Satellite Server and Capsule Server](#) in *Administering Red Hat Satellite*.
2. In the Satellite web UI, navigate to **Monitor > Jobs**.
3. Click **Run Job**.
4. From the **Job category** list, select **Maintenance Operations**.
5. From the **Job template** list, select **Capsule Upgrade Playbook**.
6. In the **Search Query** field, enter the host name of the Capsule.
7. Ensure that **Apply to 1 host** is displayed in the **Resolves to** field.

8. In the **target\_version** field, enter the target version of the Capsule.
9. In the **whitelist\_options** field, enter the options.
10. Select the schedule for the job execution in **Schedule**.
11. In the **Type of query** section, click **Static Query**.

## 2.7. 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 6.13 to 6.14.

### 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
```