Red Hat Satellite 6.8

Installing Satellite Server from a Disconnected Network

Installing Red Hat Satellite Server from a Disconnected Network

Last Updated: 2024-02-15

Red Hat Satellite 6.8 Installing Satellite Server from a Disconnected Network

Installing Red Hat Satellite Server from a Disconnected Network

Enter your first name here. Enter your surname here.
Enter your organisation's name here. Enter your organisational division here.
Enter your email address here.

法律上の通知

概要

This guide describes how to install Red Hat Satellite from a disconnected network, perform initial configuration, and configure external services.

目次

第1章 PREPARING YOUR ENVIRONMENT FOR INSTALLATION 4
1.1. SYSTEM REQUIREMENTS 4
1.2. STORAGE REQUIREMENTS 5
1.3. STORAGE GUIDELINES 5
1.4. SUPPORTED OPERATING SYSTEMS 7
1.5. SUPPORTED BROWSERS 7
1.6. PORTS AND FIREWALLS REQUIREMENTS 8
1.7. ENABLING CONNECTIONS FROM A CLIENT TO SATELLITE SERVER 10
1.8. VERIFYING FIREWALL SETTINGS 11
1.9. VERIFYING DNS RESOLUTION 11

第2章 INSTALLING SATELLITE SERVER 13
2.1. DOWNLOADING THE BINARY DVD IMAGES 13
2.2. CONFIGURING THE BASE OPERATING SYSTEM WITH OFFLINE REPOSITORIES 14
2.3. INSTALLING THE SATELLITE PACKAGES FROM THE OFFLINE REPOSITORIES 14
2.4. RESOLVING PACKAGE DEPENDENCY ERRORS 15
2.5. SYNCHRONIZING THE SYSTEM CLOCK WITH CHRONYD 16
2.6. INSTALLING THE SOS PACKAGE ON THE BASE OPERATING SYSTEM 16
2.7. CONFIGURING SATELLITE SERVER 17
2.7.1. Configuring Satellite Manually 17
2.7.2. Configuring Satellite Automatically using an Answer File 18
2.8. ENABLING THE DISCONNECTED MODE 19
2.9. IMPORTING A SUBSCRIPTION MANIFEST INTO SATELLITE SERVER 19

第3章 PERFORMING ADDITIONAL CONFIGURATION ON SATELLITE SERVER 21
3.1. CONFIGURING SATELLITE TO SYNCHRONIZE CONTENT WITH A LOCAL CDN SERVER 21
3.2. IMPORTING KICKSTART REPOSITORIES 22
3.2.1. Importing Kickstart Repositories for Red Hat Enterprise Linux 7 22
3.2.2. Importing Kickstart Repositories for Red Hat Enterprise Linux 8 23
3.3. ENABLING THE SATELLITE TOOLS 6.8 REPOSITORY 27
3.4. SYNCHRONIZING THE SATELLITE TOOLS 6.8 REPOSITORY 28
3.5. ENABLING POWER MANAGEMENT ON MANAGED HOSTS 28
3.6. CONFIGURING DNS, DHCP, AND TFTP ON SATELLITE SERVER 29
3.7. DISABLING DNS, DHCP, AND TFTP FOR UNMANAGED NETWORKS 30
3.8. CONFIGURING SATELLITE SERVER FOR OUTGOING EMAILS 31
3.9. CONFIGURING SATELLITE SERVER WITH A CUSTOM SSL CERTIFICATE 33
3.9.1. Creating a Custom SSL Certificate for Satellite Server 33
3.9.2. Deploying a Custom SSL Certificate to Satellite Server 35
3.9.3. Deploying a Custom SSL Certificate to Hosts 36
3.10. USING EXTERNAL DATABASES WITH SATELLITE 36
3.10.1. MongoDB as an External Database Considerations 37
3.10.2. PostgreSQL as an External Database Considerations 37
3.10.3. Preparing a Host for External Databases 38
3.10.4. Installing MongoDB 38
3.10.5. Installing PostgreSQL 39
3.10.6. Configuring Satellite to use External Databases 41
3.11. RESTRICTING ACCESS TO MONGOD 41
3.12. TUNING SATELLITE SERVER WITH PREDEFINED PROFILES 42

第4章 CONFIGURING SATELLITE SERVER WITH EXTERNAL SERVICES 45
4.1. CONFIGURING SATELLITE SERVER WITH EXTERNAL DNS 45
4.2. CONFIGURING SATELLITE SERVER WITH EXTERNAL DHCP 46

4.2.1. Configuring an External DHCP Server to Use with Satellite Server 46
4.2.2. Configuring Satellite Server with an External DHCP Server 49
4.3. CONFIGURING SATELLITE SERVER WITH EXTERNAL TFTP 50
4.4. CONFIGURING SATELLITE SERVER WITH EXTERNAL IDM DNS 51
4.4.1. Configuring Dynamic DNS Update with GSS-TSIG Authentication 51
4.4.2. Configuring Dynamic DNS Update with TSIG Authentication 55
4.4.3. Reverting to Internal DNS Service 57

付録A APPLYING CUSTOM CONFIGURATION TO RED HAT SATELLITE **59**

付録B RESTORING MANUAL CHANGES OVERWRITTEN BY A PUPPET RUN **60**

付録C REVERTING SATELLITE TO DOWNLOAD CONTENT FROM RED HAT CDN **61**

第1章 PREPARING YOUR ENVIRONMENT FOR INSTALLATION

Before you install Satellite, ensure that your environment meets the following requirements.

1.1. SYSTEM REQUIREMENTS

The following requirements apply to the networked base operating system:

- x86_64 architecture
- The latest version of Red Hat Enterprise Linux 7 Server
- 4-core 2.0 GHz CPU at a minimum
- A minimum of 20 GB RAM is required for Satellite Server to function. In addition, a minimum of 4 GB RAM of swap space is also recommended. Satellite running with less RAM than the minimum value might not operate correctly.
- A unique host name, which can contain lower-case letters, numbers, dots (.) and hyphens (-)
- A current Red Hat Satellite subscription
- Administrative user (root) access
- A system umask of 0022
- Full forward and reverse DNS resolution using a fully-qualified domain name

Before you install Satellite Server, ensure that your environment meets the requirements for installation.

Satellite Server must be installed on a freshly provisioned system that serves no other function except to run Satellite Server. The freshly provisioned system must not have the following users provided by external identity providers to avoid conflicts with the local users that Satellite Server creates:

- postgres
- mongodb
- apache
- qpidd
- qdrouterd
- squid
- foreman
- tomcat
- foreman-proxy
- puppet
- puppetserver

Certified hypervisors

Satellite Server is fully supported on both physical systems and virtual machines that run on hypervisors that are supported to run Red Hat Enterprise Linux. For more information about certified hypervisors, see Which hypervisors are certified to run Red Hat Enterprise Linux? .

SELinux Mode

SELinux must be enabled, either in enforcing or permissive mode. Installation with disabled SELinux is not supported. .FIPS Mode You can install Satellite Server on a Red Hat Enterprise Linux system that is operating in FIPS mode. For more information, see Enabling FIPS Mode in the **Red Hat Enterprise Linux Security Guide**.

1.2. STORAGE REQUIREMENTS

The following table details storage requirements for specific directories. These values are based on expected use case scenarios and can vary according to individual environments.

The runtime size was measured with Red Hat Enterprise Linux 6, 7, and 8 repositories synchronized.

表1.1 Storage Requirements for a Satellite Server Installation

Directory	Installation Size	Runtime Size
/var/cache/pulp/	1 MB	30 GB
/var/lib/pulp/	1 MB	300 GB
/var/lib/mongodb/	3.5 GB	50 GB
/var/lib/qpidd/	25 MB	Not Applicable
/var/log/	10 MB	10 GB
/var/opt/rh/rh-postgresql12	100 MB	10 GB
/var/spool/squid/	0 MB	10 GB
/usr	3 GB	Not Applicable
/opt	3 GB	Not Applicable
/opt/puppetlabs	500 MB	Not Applicable

1.3. STORAGE GUIDELINES

Consider the following guidelines when installing Satellite Server to increase efficiency.

- If you mount the **/tmp** directory as a separate file system, you must use the **exec** mount option in the **/etc/fstab** file. If **/tmp** is already mounted with the **noexec** option, you must change the option to **exec** and re-mount the file system. This is a requirement for the **puppetserver** service to work.

- Because most Satellite Server data is stored in the **/var** directory, mounting **/var** on LVM storage can help the system to scale.
- Using the same volume for the **/var/cache/pulp/** and **/var/lib/pulp/** directories can decrease the time required to move content from **/var/cache/pulp/** to **/var/lib/pulp/** after synchronizing.
- The **/var/lib/qpidd/** directory uses slightly more than 2 MB per Content Host managed by the **goferd** service. For example, 10 000 Content Hosts require 20 GB of disk space in **/var/lib/qpidd/**.
- Use high-bandwidth, low-latency storage for the **/var/lib/pulp/** and **/var/lib/mongodb/** directories. As Red Hat Satellite has many operations that are I/O intensive, using high latency, low-bandwidth storage causes performance degradation. Ensure your installation has a speed in the range 60 - 80 Megabytes per second. You can use the **fio** tool to get this data. See the Red Hat Knowledgebase solution Impact of Disk Speed on Satellite Operations for more information on using the **fio** tool.

File System Guidelines

- Use the XFS file system for Red Hat Satellite 6 because it does not have the inode limitations that **ext4** does. Because Satellite Server uses a lot of symbolic links it is likely that your system might run out of inodes if using **ext4** and the default number of inodes.
- Do not use NFS with MongoDB because MongoDB does not use conventional I/O to access data files and performance problems occur when both the data files and the journal files are hosted on NFS. If required to use NFS, mount the volume with the following options in the **/etc/fstab** file: **bg**, **nolock**, and **noatime**.
- Do not use NFS for Pulp data storage. Using NFS for Pulp has a negative performance impact on content synchronization.
- Do not use the GFS2 file system as the input-output latency is too high.

Log File Storage

Log files are written to **/var/log/messages/**, **/var/log/httpd/**, and **/var/lib/foreman-proxy/openscap/content/**. You can manage the size of these files using **logrotate**. For more information, see Log Rotation in the **Red Hat Enterprise Linux 7 System Administrator's Guide**

The exact amount of storage you require for log messages depends on your installation and setup.

SELinux Considerations for NFS Mount

When the **/var/lib/pulp** directory is mounted using an NFS share, SELinux blocks the synchronization process. To avoid this, specify the SELinux context of the **/var/lib/pulp** directory in the file system table by adding the following lines to **/etc/fstab**:

```
nfs.example.com:/nfsshare  /var/lib/pulp/content  nfs
context="system_u:object_r:httpd_sys_rw_content_t:s0"  1 2
```

If NFS share is already mounted, remount it using the above configuration and enter the following command:

```
# chcon -R system_u:object_r:httpd_sys_rw_content_t:s0 /var/lib/pulp
```

Duplicated Packages

Packages that are duplicated in different repositories are only stored once on the disk. Additional repositories containing duplicate packages require less additional storage. The bulk of storage resides in the **/var/lib/mongodb/** and **/var/lib/pulp/** directories. These end points are not manually configurable. Ensure that storage is available on the **/var** file system to prevent storage problems.

Temporary Storage

The **/var/cache/pulp/** directory is used to temporarily store content while it is being synchronized. After a full synchronization task is completed, the content is moved to the **/var/lib/pulp/** directory.

For content in RPM format, each RPM file is moved to the **/var/lib/pulp** directory after it is synchronized. A maximum of 5 RPM files are stored in the **/var/cache/pulp/** directory at any time. Up to 8 RPM content synchronization tasks can run simultaneously by default, with each using up to 1 GB of metadata.

Software Collections

Software collections are installed in the **/opt/rh/** and **/opt/theforeman/** directories.

Write and execute permissions by the root user are required for installation to the **/opt** directory.

Symbolic links

You cannot use symbolic links for **/var/lib/pulp/** and **/var/lib/mongodb/**.

ISO Images

For content in ISO format, all ISO files per synchronization task are stored in **/var/cache/pulp/** until the task is complete, after which they are moved to the **/var/lib/pulp/** directory.

If you plan to use ISO images for installing or updating, you must provide external storage or allow space in **/var/tmp** for temporarily storing ISO files.

For example, if you are synchronizing four ISO files, each 4 GB in size, this requires a total of 16 GB in the **/var/cache/pulp/** directory. Consider the number of ISO files you intend synchronizing because the temporary disk space required for them typically exceeds that of RPM content.

1.4. SUPPORTED OPERATING SYSTEMS

You can install the operating system from a disc, local ISO image, kickstart, or any other method that Red Hat supports. Red Hat Satellite Server is supported only on the latest versions of Red Hat Enterprise Linux 7 Server that is available at the time when Satellite Server 6.8 is installed. Previous versions of Red Hat Enterprise Linux including EUS or z-stream are not supported.

Red Hat Satellite Server requires a Red Hat Enterprise Linux installation with the **@Base** package group with no other package-set modifications, and without third-party configurations or software not directly necessary for the direct operation of the server. This restriction includes hardening and other non-Red Hat security software. If you require such software in your infrastructure, install and verify a complete working Satellite Server first, then create a backup of the system before adding any non-Red Hat software.

Install Satellite Server on a freshly provisioned system.

Red Hat does not support using the system for anything other than running Satellite Server.

1.5. SUPPORTED BROWSERS

Satellite supports recent versions of Firefox and Google Chrome browsers.

The Satellite web UI and command-line interface support English, Portuguese, Simplified Chinese Traditional Chinese, Korean, Japanese, Italian, Spanish, Russian, French, and German.

1.6. PORTS AND FIREWALLS REQUIREMENTS

For the components of Satellite architecture to communicate, ensure that the required network ports are open and free on the base operating system. You must also ensure that the required network ports are open on any network-based firewalls.

Use this information to configure any network-based firewalls. Note that some cloud solutions must be specifically configured to allow communications between machines because they isolate machines similarly to network-based firewalls. If you use an application-based firewall, ensure that the application-based firewall permits all applications that are listed in the tables and known to your firewall. If possible, disable the application checking and allow open port communication based on the protocol.

Integrated Capsule

Satellite Server has an integrated Capsule and any host that is directly connected to Satellite Server is a Client of Satellite in the context of this section. This includes the base operating system on which Capsule Server is running.

Clients of Capsule

Hosts which are clients of Capsules, other than Satellite's integrated Capsule, do not need access to Satellite Server. For more information on Satellite Topology, see Capsule Networking in **Planning for Red Hat Satellite 6**.

Required ports can change based on your configuration.

A matrix table of ports is available in the Red Hat Knowledgebase solution Red Hat Satellite List of Network Ports.

The following tables indicate the destination port and the direction of network traffic:

表1.2 Ports for Browser-based User Interface Access to Satellite

Port	Protocol	Service	Required For
443	TCP	HTTPS	Browser-based UI access to Satellite
80	TCP	HTTP	Redirection to HTTPS for web UI access to Satellite (Optional)

表1.3 Ports for Client to Satellite Communication

Port	Protocol	Service	Required For
80	TCP	HTTP	Anaconda, yum, for obtaining Katello certificates, templates, and for downloading iPXE firmware

Port	Protocol	Service	Required For
443	TCP	HTTPS	Subscription Management Services, yum, Telemetry Services, and for connection to the Katello Agent
5646	TCP	AMQP	The Capsule Qpid dispatch router to the Qpid dispatch router in Satellite
5647	TCP	AMQP	Katello Agent to communicate with Satellite's Qpid dispatch router
8000	TCP	HTTP	Anaconda to download kickstart templates to hosts, and for downloading iPXE firmware
8140	TCP	HTTPS	Puppet agent to Puppet master connections
9090	TCP	HTTPS	Sending SCAP reports to the integrated Capsule, for the discovery image during provisioning, and for communicating with Satellite Server to copy the SSH keys for Remote Execution (Rex) configuration
53	TCP and UDP	DNS	Client DNS queries to a Satellite's integrated Capsule DNS service (Optional)
67	UDP	DHCP	Client to Satellite's integrated Capsule broadcasts, DHCP broadcasts for Client provisioning from a Satellite's integrated Capsule (Optional)
69	UDP	TFTP	Clients downloading PXE boot image files from a Satellites' integrated Capsule for provisioning (Optional)
5000	TCP	HTTPS	Connection to Katello for the Docker registry (Optional)

Any managed host that is directly connected to Satellite Server is a client in this context because it is a client of the integrated Capsule. This includes the base operating system on which a Capsule Server is running.

表1.4 Ports for Satellite to Capsule Communication

Port	Protocol	Service	Required for
443	TCP	HTTPS	Connections to the Pulp server in the Capsule
9090	TCP	HTTPS	Connections to the proxy in the Capsule
80	TCP	HTTP	Downloading a bootdisk (Optional)

表1.5 Optional Network Ports

Port	Protocol	Service	Required For
22	TCP	SSH	Satellite and Capsule originated communications, for Remote Execution (Rex) and Ansible.
443	TCP	HTTPS	Satellite originated communications, for vCenter compute resource.
5000	TCP	HTTP	Satellite originated communications, for compute resources in OpenStack or for running containers.
22, 16514	TCP	SSH, SSL/TLS	Satellite originated communications, for compute resources in libvirt.
389, 636	TCP	LDAP, LDAPS	Satellite originated communications, for LDAP and secured LDAP authentication sources.
5900 to 5930	TCP	SSL/TLS	Satellite originated communications, for NoVNC console in web UI to hypervisors.

1.7. ENABLING CONNECTIONS FROM A CLIENT TO SATELLITE SERVER

Capsules and Content Hosts that are clients of a Satellite Server's internal Capsule require access through Satellite's host-based firewall and any network-based firewalls.

Use this procedure to configure the host-based firewall on the Red Hat Enterprise Linux 7 system that Satellite is installed on, to enable incoming connections from Clients, and to make the configuration persistent across system reboots. For more information on the ports used, see 「Ports and Firewalls Requirements」.

Procedure

1. To open the ports for client to Satellite communication, enter the following command on the base operating system that you want to install Satellite on:

```
# firewall-cmd \
--add-port="80/tcp" --add-port="443/tcp" \
--add-port="5647/tcp" --add-port="8000/tcp" \
--add-port="8140/tcp" --add-port="9090/tcp" \
--add-port="53/udp" --add-port="53/tcp" \
--add-port="67/udp" --add-port="69/udp" \
--add-port="5000/tcp"
```

2. Make the changes persistent:

```
# firewall-cmd --runtime-to-permanent
```

1.8. VERIFYING FIREWALL SETTINGS

Use this procedure to verify your changes to the firewall settings.

Procedure

To verify the firewall settings, complete the following step:

1. Enter the following command:

```
# firewall-cmd --list-all
```

For more information, see Getting Started with firewalld in the **Red Hat Enterprise Linux 7 Security Guide**.

1.9. VERIFYING DNS RESOLUTION

Verify the full forward and reverse DNS resolution using a fully-qualified domain name to prevent issues while installing Satellite.

Procedure

1. Ensure that the host name and local host resolve correctly:

```
# ping -c1 localhost
# ping -c1 `hostname -f` # my_system.domain.com
```

Successful name resolution results in output similar to the following:

```
# ping -c1 localhost
PING localhost (127.0.0.1) 56(84) bytes of data.
64 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.043 ms

--- localhost ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.043/0.043/0.043/0.000 ms

# ping -c1 `hostname -f`
```

```
PING hostname.gateway (XX.XX.XX.XX) 56(84) bytes of data.
64 bytes from hostname.gateway (XX.XX.XX.XX): icmp_seq=1 ttl=64 time=0.019 ms

--- localhost.gateway ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.019/0.019/0.019/0.000 ms
```

2. To avoid discrepancies with static and transient host names, set all the host names on the system by entering the following command:

```
# hostnamectl set-hostname name
```

For more information, see the Configuring Host Names Using hostnamectl in the **Red Hat Enterprise Linux 7 Networking Guide**.

警告

Name resolution is critical to the operation of Satellite 6. If Satellite cannot properly resolve its fully qualified domain name, tasks such as content management, subscription management, and provisioning will fail.

第2章 INSTALLING SATELLITE SERVER

When the intended host for Satellite Server is in a disconnected environment, you can install Satellite Server by using an external computer to download an ISO image of the packages, and copying the packages to the system you want to install Satellite Server on. This method is not recommended for any other situation as ISO images might not contain the latest updates, bug fixes, and functionality.

Use the following procedures to install Satellite Server, perform the initial configuration, and import subscription manifests.

Before you continue, consider which manifests are relevant for your environment. For more information on manifests, see Managing Subscriptions in the **Content Management Guide**.

注記

You cannot register Satellite Server to itself.

2.1. DOWNLOADING THE BINARY DVD IMAGES

Use this procedure to download the ISO images for Red Hat Enterprise Linux and Red Hat Satellite.

Procedure

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

9. Copy the ISO files to **/var/tmp** on the Satellite base operating system or other accessible storage device.

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

2.2. CONFIGURING THE BASE OPERATING SYSTEM WITH OFFLINE REPOSITORIES

Use this procedure to configure offline repositories for the Red Hat Enterprise Linux and Red Hat Satellite ISO images.

Procedure

1. Create a directory to serve as the mount point for the ISO file corresponding to the base operating system's version.

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

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

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

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

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

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

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

5. Verify that the repository has been configured.

```
# yum repolist
```

6. Create a directory to serve as the mount point for the ISO file of the Satellite Server.

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

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

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

2.3. INSTALLING THE SATELLITE PACKAGES FROM THE OFFLINE REPOSITORIES

Use this procedure to install the Satellite packages from the offline repositories.

Procedure

1. Ensure the ISO images for Red Hat Enterprise Linux Server and Red Hat Satellite are mounted:

```
# findmnt -t iso9660
```

2. Import the Red Hat GPG keys:

```
# rpm --import /etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release
```

3. Ensure the base operating system is up to date with the Binary DVD image:

```
# yum update
```

4. Change to the directory where the Satellite ISO is mounted:

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

5. Run the installation script in the mounted directory:

```
# ./install_packages
```

If you have successfully installed the Satellite packages, the following message is displayed: **Install is complete. Please run satellite-installer --scenario satellite**.

2.4. RESOLVING PACKAGE DEPENDENCY ERRORS

If there are package dependency errors during installation of Satellite Server packages, you can resolve the errors by downloading and installing packages from Red Hat Customer Portal. For more information about resolving dependency errors, see the KCS solution How can I use the yum output to solve yum dependency errors?.

If you have successfully installed the Satellite packages, skip this procedure.

Procedure

1. Go to the Red Hat Customer Portal and log in.
2. Click **DOWNLOADS**.
3. Click the Product that contains the package that you want to download.
4. Ensure that you have the correct **Product Variant**, **Version**, and **Architecture** for your environment.
5. Click the **Packages** tab.
6. In the **Search** field, enter the name of the package.
7. Click the package.
8. From the **Version** list, select the version of the package.
9. At the bottom of the page, click **Download Now**.
10. Copy the package to the Satellite base operating system.
11. On Satellite Server, change to the directory where the package is located:

```
# cd /path-to-package/
```

12. Install the package locally:

```
# yum localinstall package_name
```

13. Change to the directory where the Satellite ISO is mounted:

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

14. Verify that you have resoled the package dependency errors by installing the Satellite Server packages. If there are further package dependency errors, repeat this procedure.

```
# ./install_packages
```

If you have successfully installed the Satellite packages, the following message is displayed: **Install is complete. Please run satellite-installer --scenario satellite**.

2.5. SYNCHRONIZING THE SYSTEM CLOCK WITH CHRONYD

To minimize the effects of time drift, you must synchronize the system clock on the base operating system on which you want to install Satellite Server with Network Time Protocol (NTP) servers. If the base operating system clock is configured incorrectly, certificate verification might fail.

For more information about the **chrony** suite, see Configuring NTP Using the chrony Suite in the **Red Hat Enterprise Linux 7 System Administrator's Guide**.

Procedure

1. Install the **chrony** package:

```
# yum install chrony
```

2. Start and enable the **chronyd** service:

```
# systemctl start chronyd
# systemctl enable chronyd
```

2.6. INSTALLING THE SOS PACKAGE ON THE BASE OPERATING SYSTEM

Install the **sos** package on the base operating system so that you can collect configuration and diagnostic information from a Red Hat Enterprise Linux system. You can also use it to provide the initial system analysis, which is required when opening a service request with Red Hat Technical Support. For more information on using **sos**, see the Knowledgebase solution What is a sosreport and how to create one in Red Hat Enterprise Linux 4.6 and later? on the Red Hat Customer Portal.

Procedure

1. Install the **sos** package:

```
# yum install sos
```

2.7. CONFIGURING SATELLITE SERVER

Install Satellite Server using the **satellite-installer** installation script. Choose from one of the following methods:

- 「Configuring Satellite Manually」. This method is performed by running the installation script with one or more command options. The command options override the corresponding default initial configuration options and are recorded in the Satellite answer file. You can run the script as often as needed to configure any necessary options.
- 「Configuring Satellite Automatically using an Answer File」. This method is performed by using an answer file to automate the configuration process when running the installation script. The default Satellite answer file is **/etc/foreman-installer/scenarios.d/satellite-answers.yaml**. The answer file in use is set by the **answer_file** directive in the **/etc/foreman-installer/scenarios.d/satellite.yaml** configuration file.

注記

Depending on the options that you use when running the Satellite installer, the configuration can take several minutes to complete. An administrator can view the answer file to see previously used options for both methods.

2.7.1. Configuring Satellite Manually

This initial configuration procedure creates an organization, location, user name, and password. After the initial configuration, you can create additional organizations and locations if required. The initial configuration also installs MongoDB and PostgreSQL databases on the same server.

The installation process can take tens of minutes to complete. If you are connecting remotely to the system, use a utility such as **screen** or **tmux** that allows suspending and reattaching a communication session so that you can check the installation progress in case you become disconnected from the remote system. The Red Hat Knowledgebase article How to use the screen command describes installing **screen**; alternately see the **screen** manual page for more information. If you lose connection to the shell where the installation command is running, see the log at **/var/log/foreman-installer/satellite.log** to determine if the process completed successfully.

Considerations for Manual Configuration

- Use the **satellite-installer --scenario satellite --help** command to display the available options and any default values. If you do not specify any values, the default values are used.
- Specify a meaningful value for the option: **--foreman-initial-organization**. This can be your company name. An internal label that matches the value is also created and cannot be changed afterwards. If you do not specify a value, an organization called **Default Organization** with the label **Default_Organization** is created. You can rename the organization name but not the label.
- By default, all configuration files configured by the installer are managed by Puppet. When **satellite-installer** runs, it overwrites any manual changes to the Puppet managed files with the initial values. By default, Satellite Server is installed with the Puppet agent running as a service. If required, you can disable Puppet agent on Satellite Server using the **--puppet-runmode=none** option.

- If you want to manage DNS files and DHCP files manually, use the **--foreman-proxy-dns-managed=false** and **--foreman-proxy-dhcp-managed=false** options so that Puppet does not manage the files related to the respective services. For more information on how to apply custom configuration on other services, see 付録A *Applying Custom Configuration to Red Hat Satellite*.

Procedure

1. Enter the following command with any additional options that you want to use:

```
# satellite-installer --scenario satellite \
--foreman-initial-organization "initial_organization_name" \
--foreman-initial-location "initial_location_name" \
--foreman-initial-admin-username admin_user_name \
--foreman-initial-admin-password admin_password
```

   The script displays its progress and writes logs to **/var/log/foreman-installer/satellite.log**.

2. Unmount the ISO images:

```
# umount /media/sat6
# umount /media/rhel7-server
```

2.7.2. Configuring Satellite Automatically using an Answer File

You can use answer files to automate installations with customized options. The initial answer file is sparsely populated. After you run the **satellite-installer** script the first time, the answer file is populated with the standard parameter values for installation. You can change the configuration of Satellite Server at any time.

You should use the FQDN instead of the IP address where possible in case of network changes.

Procedure

1. Copy the default answer file **/etc/foreman-installer/scenarios.d/satellite-answers.yaml** to a location on your local file system.

```
# cp /etc/foreman-installer/scenarios.d/satellite-answers.yaml \
/etc/foreman-installer/scenarios.d/my-answer-file.yaml
```

2. To view all of the configurable options, enter the **satellite-installer --scenario satellite --help** command.

3. Open your copy of the answer file, edit the values to suit your environment, and save the file.

4. Open the **/etc/foreman-installer/scenarios.d/satellite.yaml** file and edit the answer file entry to point to your custom answer file.

```
:answer_file: /etc/foreman-installer/scenarios.d/my-answer-file.yaml
```

5. Run the **satellite-installer** script.

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

6. Unmount the ISO images.

```
# umount /media/sat6
# umount /media/rhel7-server
```

2.8. ENABLING THE DISCONNECTED MODE

Enable the disconnected mode on Satellite Server. When the disconnected mode is enabled, Satellite Server does not access the Red Hat Content Delivery Network (CDN).

Procedure

1. In the Satellite web UI, navigate to **Administer** > **Settings**.
2. Click the **Content** tab.
3. Set the **Disconnected mode** value to **Yes**.

For CLI Users

- Enter the following command on Satellite Server:

```
# hammer settings set --name content_disconnected --value true
```

2.9. IMPORTING A SUBSCRIPTION MANIFEST INTO SATELLITE SERVER

Use the following procedure to import a Subscription Manifest into Satellite Server.

Prerequisites

- You must have a Subscription Manifest file exported from the Customer Portal. For more information, see Using Manifests in the **Using Red Hat Subscription Management**guide.
- Ensure that you enable the disconnected mode on your Satellite Server. For more information, see 「Enabling the Disconnected Mode」.

Procedure

1. In the Satellite web UI, ensure the context is set to the organization you want to use.
2. Navigate to **Content** > **Subscriptions** and click **Manage Manifest**.
3. In the Manage Manifest window, click **Browse**.
4. Navigate to the location that contains the Subscription Manifest file, then click **Open**. If the Manage Manifest window does not close automatically, click **Close** to return to the Subscriptions window.

For CLI Users

1. Copy the Subscription Manifest file from your client to Satellite Server:

```
$ scp ~/manifest_file.zip root@satellite.example.com:~/.
```

2. Log in to Satellite Server as the **root** user and import the Subscription Manifest file:

```
# hammer subscription upload \
--file ~/manifest_file.zip \
--organization "organization_name"
```

第3章 PERFORMING ADDITIONAL CONFIGURATION ON SATELLITE SERVER

3.1. CONFIGURING SATELLITE TO SYNCHRONIZE CONTENT WITH A LOCAL CDN SERVER

In a disconnected environment, you must ensure that Satellite Server contains the required content to provision systems with the latest security updates, errata, and packages. To do this, follow this procedure to download content ISO images from the Red Hat Customer Portal and import them into a local CDN server. You can host the local CDN server on the base operating system of Satellite Server or on a system that is accessible to Satellite over HTTP. Next, you must configure Satellite Server to synchronize content with the local CDN server.

Procedure

1. Log on to the Red Hat Customer Portal at https://access.redhat.com.
2. In the upper left of the window, click **Downloads** and select **Red Hat Satellite**.
3. Click the **Content ISOs** tab. This page lists all the products that are available in your subscription.
4. Click the link for the product name, such as **Red Hat Enterprise Linux 7 Server (x86_64)**to download the ISO image.
5. Copy all of Satellite Content ISO images to a system that you want to use as a local CDN server. For example, the **/root/isos** directory on Satellite Server.
   Note that storing the content on the same system where Satellite is installed is not a requirement. The CDN can be hosted on a different system inside the same disconnected network as long as it is accessible to Satellite Server over HTTP.
6. On the system that you want to use as your local CDN server, create a local directory that is accessible over httpd. For example, **/var/www/html/pub/sat-import/**:

```
# mkdir -p /var/www/html/pub/sat-import/
```

7. Create a mount point and temporarily mount the ISO image at that location:

```
# mkdir /mnt/iso
# mount -o loop /root/isos/first_iso /mnt/iso
```

8. Recursively copy content of the first ISO image to the local directory:

```
# cp -ruv /mnt/iso/* /var/www/html/pub/sat-import/
```

9. If you do not plan to use the mounted binary DVD ISO image, unmount and remove the mount point:

```
# umount /mnt/iso
# rmdir /mnt/iso
```

10. Repeat the above step for each ISO image until you have copied all the data from the Content ISO images into **/var/www/html/pub/sat-import/**.

11. Ensure that the SELinux context for the directory is correct:

```
# restorecon -rv /var/www/html/pub/sat-import/
```

12. In the Satellite web UI, navigate to **Content** > **Subscriptions**.

13. Click **Manage Manifest**.

14. Edit the **Red Hat CDN URL** field to point to the host name of the system that you use as a local CDN server with the newly created directory, for example: **http://server.example.com/pub/sat-import/**

15. Click **Update** and then upload your manifest into Satellite.

3.2. IMPORTING KICKSTART REPOSITORIES

Kickstart repositories are not provided by the Content ISO image. To use Kickstart repositories in your disconnected Satellite, you must download a binary DVD ISO file for the version of Red Hat Enterprise Linux that you want to use and copy the Kickstart files to Satellite.

To import Kickstart repositories for Red Hat Enterprise Linux 7, complete 「Importing Kickstart Repositories for Red Hat Enterprise Linux 7」.

To import Kickstart repositories for Red Hat Enterprise Linux 8, complete 「Importing Kickstart Repositories for Red Hat Enterprise Linux 8」.

3.2.1. Importing Kickstart Repositories for Red Hat Enterprise Linux 7

To import Kickstart repositories for Red Hat Enterprise Linux 7, complete the following steps on Satellite.

Procedure

1. Navigate to the Red Hat Customer Portal at https://access.redhat.com/ and log in.

2. In the upper left of the window, click **Downloads**.

3. To the right of **Red Hat Enterprise Linux 7**, click **Versions 7 and below**.

4. From the **Version** list, select the required version of the Red Hat Enterprise Linux 7, for example 7.7.

5. In the Download Red Hat Enterprise Linux window, locate the binary DVD version of the ISO image, for example, **Red Hat Enterprise Linux 7.7 Binary DVD**, and click **Download Now**.

6. When the download completes, copy the ISO image to Satellite Server.

7. On Satellite Server, create a mount point and temporarily mount the ISO image at that location:

```
# mkdir /mnt/iso
# mount -o loop rhel-binary-dvd.iso /mnt/iso
```

8. Create Kickstart directories:

```
# mkdir --parents \
/var/www/html/pub/sat-import/content/dist/rhel/server/7/7.7/x86_64/kickstart/
```

9. Copy the **kickstart** files from the ISO image:

```
# cp -a /mnt/iso/* /var/www/html/pub/sat-
import/content/dist/rhel/server/7/7.7/x86_64/kickstart/
```

10. Add the following entries to the listing files:
To the **/var/www/html/pub/sat-import/content/dist/rhel/server/7/listing** file, append the version number with a new line. For example, for the RHEL 7.7 ISO, append **7.7**.

    To the **/var/www/html/pub/sat-import/content/dist/rhel/server/7/7.7/listing** file, append the architecture with a new line. For example, **x86_64**.

    To the **/var/www/html/pub/sat-import/content/dist/rhel/server/7/7.7/x86_64/listing** file, append **kickstart** with a new line.

11. Copy the **.treeinfo** files from the ISO image:

```
# cp /mnt/iso/.treeinfo \
/var/www/html/pub/sat-import/content/dist/rhel/server/7/7.7/x86_64/kickstart/treeinfo
```

12. If you do not plan to use the mounted binary DVD ISO image, unmount and remove the directory:

```
# umount /mnt/iso
# rmdir /mnt/iso
```

13. In the Satellite web UI, enable the Kickstart repositories.

3.2.2. Importing Kickstart Repositories for Red Hat Enterprise Linux 8

To import Kickstart repositories for Red Hat Enterprise Linux 8, complete the following steps on Satellite.

Procedure

1. Navigate to the Red Hat Customer Portal at https://access.redhat.com/ and log in.
2. In the upper left of the window, click **Downloads**.
3. Click **Red Hat Enterprise Linux 8**
4. In the Download Red Hat Enterprise Linux window, locate the binary DVD version of the ISO image, for example, **Red Hat Enterprise Linux 8.1 Binary DVD**, and click **Download Now**.
5. When the download completes, copy the ISO image to Satellite Server.
6. On Satellite Server, create a mount point and temporarily mount the ISO image at that location:

```
# mkdir /mnt/iso
# mount -o loop rhel-binary-dvd.iso /mnt/iso
```

7. Create directories for Red Hat Enterprise Linux 8 AppStream and BaseOS Kickstart repositories:

```
# mkdir --parents \
/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/appstream/kickstart

# mkdir --parents \
 /var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/baseos/kickstart
```

8. Copy the **kickstart** files from the ISO image:

```
# cp -a /mnt/iso/AppStream/* \
/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/appstream/kickstart

# cp -a /mnt/iso/BaseOS/* /mnt/iso/images/ \
/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/baseos/kickstart
```

Note that for BaseOS, you must also copy the contents of the **/mnt/iso/images/** directory.

9. Add the following entries to the listing files:
To the **/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/appstream/listing** file, append **kickstart** with a new line.

To the **/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/baseos/listing** file, append **kickstart** with a new line:

To the **/var/www/html/pub/sat-import/content/dist/rhel8/listing** file, append the version number with a new line. For example, for the RHEL 8.1 binary ISO, append **8.1**.

10. Copy the **.treeinfo** files from the ISO image:

```
# cp /mnt/iso/.treeinfo \
/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/appstream/kickstart/treeinfo

# cp /mnt/iso/.treeinfo \
/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/baseos/kickstart/treeinfo
```

11. Open the **/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/baseos/kickstart/treeinfo** file for editing.

12. In the **[general]** section, make the following changes:

- Change **packagedir = AppStream/Packages** to **packagedir = Packages**
- Change **repository = AppStream** to **repository = .**
- Change **variant = AppStream** to **variant = BaseOS**
- Change **variants = AppStream,BaseOS** to **variants = BaseOS**

13. In the **[tree]** section, change **variants = AppStream,BaseOS** to **variants = BaseOS**.

14. In the **[variant-BaseOS]** section, make the following changes:
    - Change **packages = BaseOS/Packages** to **packages = Packages**
    - Change **repository = BaseOS** to **repository = .**
15. Delete the **[media]** and **[variant-AppStream]** sections.
16. Save and close the file.
17. Verify that the **/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/baseos/kickstart/treeinfo** file has the following format:

```
[checksums]
images/efiboot.img =
sha256:9ad9beee4c906cd05d227a1be7a499c8d2f20b3891c79831325844c845262bb6
images/install.img =
sha256:e246bf4aedfff3bb54ae9012f959597cdab7387aadb3a504f841bdc2c35fe75e
images/pxeboot/initrd.img =
sha256:a66e3c158f02840b19c372136a522177a2ab4bd91cb7269fb5bfdaaf7452efef
images/pxeboot/vmlinuz =
sha256:789028335b64ddad343f61f2abfdc9819ed8e9dfad4df43a2694c0a0ba780d16

[general]
; WARNING.0 = This section provides compatibility with pre-productmd treeinfos.
; WARNING.1 = Read productmd documentation for details about new format.
arch = x86_64
family = Red Hat Enterprise Linux
name = Red Hat Enterprise Linux 8.1.0
packagedir = Packages
platforms = x86_64,xen
repository = .
timestamp = 1571146127
variant = BaseOS
variants = BaseOS
version = 8.1.0

[header]
type = productmd.treeinfo
version = 1.2

[images-x86_64]
efiboot.img = images/efiboot.img
initrd = images/pxeboot/initrd.img
kernel = images/pxeboot/vmlinuz

[images-xen]
initrd = images/pxeboot/initrd.img
kernel = images/pxeboot/vmlinuz

[release]
name = Red Hat Enterprise Linux
short = RHEL
version = 8.1.0

[stage2]
```

```
mainimage = images/install.img

[tree]
arch = x86_64
build_timestamp = 1571146127
platforms = x86_64,xen
variants = BaseOS

[variant-BaseOS]
id = BaseOS
name = BaseOS
packages = Packages
repository = .
type = variant
uid = BaseOS
```

18. Open the **/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/appstream/kickstart/treeinfo** file for editing.

19. In the **[general]** section, make the following changes:

    - Change **packagedir = AppStream/Packages** to **packagedir = Packages**
    - Change **repository = AppStream** to **repository = .**
    - Change **variants = AppStream,BaseOS** to **variants = AppStream**

20. In the **[tree]** section, change **variants = AppStream,BaseOS** to **variants = AppStream**

21. In the **[variant-AppStream]** section, make the following changes:

    - Change **packages = AppStream/Packages** to **packages = Packages**
    - Change **repository = AppStream** to **repository = .**

22. Delete the following sections from the file: **[checksums]**, **[images-x86_64]**, **[images-xen]**, **[media]**, **[stage2]**, **[variant-BaseOS]**.

23. Save and close the file.

24. Verify that the **/var/www/html/pub/sat-import/content/dist/rhel8/8.1/x86_64/appstream/kickstart/treeinfo** file has the following format:

```
[general]
; WARNING.0 = This section provides compatibility with pre-productmd treeinfos.
; WARNING.1 = Read productmd documentation for details about new format.
arch = x86_64
family = Red Hat Enterprise Linux
name = Red Hat Enterprise Linux 8.1.0
packagedir = Packages
platforms = x86_64,xen
repository = .
timestamp = 1571146127
variant = AppStream
variants = AppStream
version = 8.1.0
```

```
[header]
type = productmd.treeinfo
version = 1.2

[release]
name = Red Hat Enterprise Linux
short = RHEL
version = 8.1.0

[tree]
arch = x86_64
build_timestamp = 1571146127
platforms = x86_64,xen
variants = AppStream

[variant-AppStream]
id = AppStream
name = AppStream
packages = Packages
repository = .
type = variant
uid = AppStream
```

25. If you do not plan to use the mounted binary DVD ISO image, unmount and remove the directory:

```
# umount /mnt/iso
# rmdir /mnt/iso
```

26. In the Satellite web UI, enable the Kickstart repositories.

3.3. ENABLING THE SATELLITE TOOLS 6.8 REPOSITORY

The Satellite Tools 6.8 repository provides the **katello-agent**, **katello-host-tools**, and **puppet** packages for clients registered to Satellite Server.

Prerequisites

- Ensure that you import all content ISO images that you require into Satellite Server.

Procedure

1. In the Satellite web UI, navigate to **Content** > **Red Hat Repositories**.
2. Use the Search field to enter the following repository name: **Satellite Tools 6.8 (for RHEL 7 Server) (RPMs)**.
3. In the Available Repositories pane, click on **Satellite Tools 6.8 (for RHEL 7 Server) (RPMs)**to expand the repository set.
   If the **Satellite Tools 6.8** items are not visible, it may be because they are not included in the Subscription Manifest obtained from the Customer Portal. To correct that, log in to the Customer Portal, add these repositories, download the Subscription Manifest and import it into Satellite.

4. For the **x86_64** entry, click the **Enable** icon to enable the repository.

Enable the Satellite Tools 6.8 repository for every supported major version of Red Hat Enterprise Linux running on your hosts. After enabling a Red Hat repository, a Product for this repository is automatically created.

For CLI Users

- Enable the Satellite Tools 6.8 repository using the **hammer repository-set enable** command:

```
# hammer repository-set enable --organization "initial_organization_name" \
--product 'Red Hat Enterprise Linux Server' \
--basearch='x86_64' \
--name 'Red Hat Satellite Tools 6.8 (for RHEL 7 Server) (RPMs)'
```

3.4. SYNCHRONIZING THE SATELLITE TOOLS 6.8 REPOSITORY

Use this section to synchronize the Satellite Tools 6.8 repository from the Red Hat Content Delivery Network (CDN) to your Satellite. This repository provides the **katello-agent**, **katello-host-tools**, and **puppet** packages for clients registered to Satellite Server.

Procedure

1. In the Satellite web UI, navigate to **Content** > **Sync Status**.
   A list of product repositories available for synchronization is displayed.
2. Click the arrow next to the **Red Hat Enterprise Linux Server** product to view available content.
3. Select **Satellite Tools 6.8 (for RHEL 7 Server) RPMs x86_64**
4. Click **Synchronize Now**.

For CLI Users

- Synchronize your Satellite Tools 6.8 repository using the **hammer repository synchronize** command:

```
# hammer repository synchronize --organization "initial_organization_name" \
--product 'Red Hat Enterprise Linux Server' \
--name 'Red Hat Satellite Tools 6.8 for RHEL 7 Server RPMs x86_64' \
--async
```

3.5. ENABLING POWER MANAGEMENT ON MANAGED HOSTS

To perform power management tasks on managed hosts using the intelligent platform management interface (IPMI) or a similar protocol, you must enable the baseboard management controller (BMC) module on Satellite Server.

Prerequisites

- All managed hosts must have a network interface of BMC type. Satellite Server uses this NIC to pass the appropriate credentials to the host. For more information, see Adding a Baseboard Management Controller (BMC) Interface in **Managing Hosts**.

Procedure

- To enable BMC, enter the following command:

```
# satellite-installer --foreman-proxy-bmc "true" \
--foreman-proxy-bmc-default-provider "freeipmi"
```

3.6. CONFIGURING DNS, DHCP, AND TFTP ON SATELLITE SERVER

To configure the DNS, DHCP, and TFTP services on Satellite Server, use the **satellite-installer** command with the options appropriate for your environment. To view a complete list of configurable options, enter the **satellite-installer --scenario satellite --help** command.

Any changes to the settings require entering the **satellite-installer** command again. You can enter the command multiple times and each time it updates all configuration files with the changed values.

To use external DNS, DHCP, and TFTP services instead, see *4章Configuring Satellite Server with External Services*.

Adding Multihomed DHCP details

If you want to use Multihomed DHCP, you must update the network interface file.

1. In the **/etc/systemd/system/dhcpd.service.d/interfaces.conf** file, edit the following line to add Multihomed DHCP:

```
[Service]
ExecStart=/usr/sbin/dhcpd -f -cf /etc/dhcp/dhcpd.conf -user dhcpd -group dhcpd --no-pid eth0
eth1 eth2
```

   If this file does not exist already, create it.

2. Enter the following command to perform a daemon reload:

```
# systemctl --system daemon-reload
```

3. Enter the following command to restart the **dhcpd** service:

```
# systemctl restart dhcpd.service
```

Prerequisites

- Ensure that the following information is available to you:
  - DHCP IP address ranges
  - DHCP gateway IP address
  - DHCP nameserver IP address
  - DNS information
  - TFTP server name
- Use the FQDN instead of the IP address where possible in case of network changes.

- Contact your network administrator to ensure that you have the correct settings.

Procedure

- Enter the **satellite-installer** command with the options appropriate for your environment. The following example shows configuring full provisioning services:

```
# satellite-installer --scenario satellite \
--foreman-proxy-dns true \
--foreman-proxy-dns-managed true \
--foreman-proxy-dns-interface eth0 \
--foreman-proxy-dns-zone example.com \
--foreman-proxy-dns-reverse 2.0.192.in-addr.arpa \
--foreman-proxy-dhcp true \
--foreman-proxy-dhcp-managed true \
--foreman-proxy-dhcp-interface eth0 \
--foreman-proxy-dhcp-range "192.0.2.100 192.0.2.150" \
--foreman-proxy-dhcp-gateway 192.0.2.1 \
--foreman-proxy-dhcp-nameservers 192.0.2.2 \
--foreman-proxy-tftp true \
--foreman-proxy-tftp-managed true \
--foreman-proxy-tftp-servername 192.0.2.3
```

You can monitor the progress of the **satellite-installer** command displayed in your prompt. You can view the logs in **/var/log/foreman-installer/satellite.log**. You can view the settings used, including the **initial_admin_password** parameter, in the **/etc/foreman-installer/scenarios.d/satellite-answers.yaml** file.

For more information about configuring DHCP, DNS, and TFTP services, see the Configuring Network Services section in the **Provisioning Guide**.

3.7. DISABLING DNS, DHCP, AND TFTP FOR UNMANAGED NETWORKS

If you want to manage TFTP, DHCP, and DNS services manually, you must prevent Satellite from maintaining these services on the operating system and disable orchestration to avoid DHCP and DNS validation errors. However, Satellite does not remove the back-end services on the operating system.

Procedure

1. On Satellite Server, enter the following command:

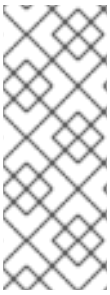
```
# satellite-installer --foreman-proxy-dhcp false \
--foreman-proxy-dns false \
--foreman-proxy-tftp false
```

2. In the Satellite web UI, navigate to **Infrastructure** > **Subnets** and select a subnet.
3. Click the **Capsules** tab and clear the **DHCP Capsule**, **TFTP Capsule**, and **Reverse DNS Capsule** fields.
4. Navigate to **Infrastructure** > **Domains** and select a domain.
5. Clear the **DNS Capsule** field.

6. Optional: If you use a DHCP service supplied by a third party, configure your DHCP server to pass the following options:

```
Option 66: IP address of Satellite or Capsule
Option 67: /pxelinux.0
```

For more information about DHCP options, see RFC 2132.



注記

Satellite 6 does not perform orchestration when a Capsule is not set for a given subnet and domain. When enabling or disabling Capsule associations, orchestration commands for existing hosts can fail if the expected records and configuration files are not present. When associating a Capsule to turn orchestration on, make sure the required DHCP and DNS records as well as the TFTP files are in place for the existing Satellite hosts in order to prevent host deletion failures in the future.

3.8. CONFIGURING SATELLITE SERVER FOR OUTGOING EMAILS

To send email messages from Satellite Server, you can use either an SMTP server, or the **sendmail** command.

Prerequisites

- If you have upgraded from a previous release, rename or remove the configuration file **/usr/share/foreman/config/email.yaml** and restart the **httpd** service. For example:

```
# mv /usr/share/foreman/config/email.yaml \
/usr/share/foreman/config/email.yaml-backup
# systemctl restart httpd
```

Procedure

1. In the Satellite web UI, navigate to **Administer → Settings**.
2. Click the **Email** tab and set the configuration options to match your preferred delivery method. The changes have an immediate effect.
   a. The following example shows the configuration options for using an SMTP server:

表3.1 Using an SMTP server as a delivery method

Name	Example value
Delivery method	SMTP
SMTP address	**smtp.example.com**
SMTP authentication	login
SMTP HELO/EHLO domain	**example.com**

Name	Example value
SMTP password	**password**
SMTP port	25
SMTP username	**user@example.com**

The **SMTP username** and **SMTP password** specify the login credentials for the SMTP server.

b. The following example uses **gmail.com** as an SMTP server:

表3.2 Using gmail.com as an SMTP server

Name	Example value
Delivery method	SMTP
SMTP address	smtp.gmail.com
SMTP authentication	plain
SMTP HELO/EHLO domain	smtp.gmail.com
SMTP enable StartTLS auto	Yes
SMTP password	**password**
SMTP port	587
SMTP username	**user**@gmail.com

c. The following example uses the **sendmail** command as a delivery method:

表3.3 Using sendmail as a delivery method

Name	Example value
Delivery method	Sendmail
Sendmail arguments	-i -t -G

The **Sendmail arguments** specify the options passed to the **sendmail** command. The default value is **-i -t**. For more information see the **sendmail 1** man page.

3. If you decide to send email using an SMTP server which uses TLS authentication, also perform one of the following steps:

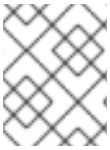
   - Mark the CA certificate of the SMTP server as trusted. To do so, execute the following commands on Satellite Server:

     ```
     # cp mailca.crt /etc/pki/ca-trust/source/anchors/
     # update-ca-trust enable
     # update-ca-trust
     ```

     Where **mailca.crt** is the CA certificate of the SMTP server.

   - Alternatively, in the web UI, set the **SMTP enable StartTLS auto** option to **No**.

4. Click **Test email** to send a test message to the user's email address to confirm the configuration is working. If a message fails to send, the web UI displays an error. See the log at **/var/log/foreman/production.log** for further details.



注記

For information on configuring email notifications for individual users or user groups, see Configuring Email Notifications in **Administering Red Hat Satellite**.

3.9. CONFIGURING SATELLITE SERVER WITH A CUSTOM SSL CERTIFICATE

By default, Red Hat Satellite 6 uses a self-signed SSL certificate to enable encrypted communications between Satellite Server, external Capsule Servers, and all hosts. If you cannot use a Satellite self-signed certificate, you can configure Satellite Server to use an SSL certificate signed by an external Certificate Authority.

To configure your Satellite Server with a custom certificate, complete the following procedures:

1. 「Creating a Custom SSL Certificate for Satellite Server」
2. 「Deploying a Custom SSL Certificate to Satellite Server」
3. 「Deploying a Custom SSL Certificate to Hosts」
4. If you have external Capsule Servers registered to Satellite Server, you must configure them with custom SSL certificates. For more information, see Configuring Capsule Server with a Custom SSL Certificate in **Installing Capsule Server**.

3.9.1. Creating a Custom SSL Certificate for Satellite Server

Use this procedure to create a custom SSL certificate for Satellite Server. If you already have a custom SSL certificate for Satellite Server, skip this procedure.

When you configure Satellite Server with custom certificates, note the following considerations:

- You must use the Privacy-Enhanced Mail (PEM) encoding for the SSL certificates.
- You cannot use the same certificate for both Satellite Server and Capsule Server.
- The same Certificate Authority must sign certificates for Satellite Server and Capsule Server.

Procedure

To create a custom SSL certificate, complete the following steps:

1. To store all the source certificate files, create a directory that is accessible only to the **root** user.

```
# mkdir /root/satellite_cert
```

2. Create a private key with which to sign the Certificate Signing Request (CSR).
Note that the private key must be unencrypted. If you use a password-protected private key, remove the private key password.

   If you already have a private key for this Satellite Server, skip this step.

```
# openssl genrsa -out /root/satellite_cert/satellite_cert_key.pem 4096
```

3. Create the **/root/satellite_cert/openssl.cnf** configuration file for the Certificate Signing Request (CSR) and include the following content:

```
[ req ]
req_extensions = v3_req
distinguished_name = req_distinguished_name
x509_extensions = usr_cert
prompt = no

[ req_distinguished_name ] 1
C  = Country Name (2 letter code)
ST = State or Province Name (full name)
L  = Locality Name (eg, city)
O  = Organization Name (eg, company)
OU = The division of your organization handling the certificate
CN = satellite.example.com 2

[ v3_req ]
basicConstraints = CA:FALSE
keyUsage = digitalSignature, nonRepudiation, keyEncipherment, dataEncipherment
extendedKeyUsage = serverAuth, clientAuth, codeSigning, emailProtection
subjectAltName = @alt_names

[ usr_cert ]
basicConstraints=CA:FALSE
nsCertType = client, server, email
keyUsage = nonRepudiation, digitalSignature, keyEncipherment
extendedKeyUsage = serverAuth, clientAuth, codeSigning, emailProtection
nsComment = "OpenSSL Generated Certificate"
subjectKeyIdentifier=hash
authorityKeyIdentifier=keyid,issuer

[ alt_names ]
DNS.1 = satellite.example.com 3
```

1. In the **[req_distinguished_name]** section, enter information about your organization.

2. Set the certificate's Common Name **CN** to match the fully qualified domain name (FQDN) of your Satellite Server. To confirm a FQDN, on that Satellite Server, enter the **hostname -f** command. This is required to ensure that the **katello-certs-check** command validates the

f command. This is required to ensure that the **katello-certs-check** command validates the certificate correctly.

3. Set the Subject Alternative Name (SAN) **DNS.1** to match the fully qualified domain name (FQDN) of your server.

4. Generate the Certificate Signing Request (CSR):

```
# openssl req -new \
-key /root/satellite_cert/satellite_cert_key.pem \ 1
-config /root/satellite_cert/openssl.cnf \ 2
-out /root/satellite_cert/satellite_cert_csr.pem 3
```

1. Path to the private key.
2. Path to the configuration file.
3. Path to the CSR to generate.

5. Send the certificate signing request to the Certificate Authority. The same Certificate Authority must sign certificates for Satellite Server and Capsule Server.
When you submit the request, specify the lifespan of the certificate. The method for sending the certificate request varies, so consult the Certificate Authority for the preferred method. In response to the request, you can expect to receive a Certificate Authority bundle and a signed certificate, in separate files.

3.9.2. Deploying a Custom SSL Certificate to Satellite Server

Use this procedure to configure your Satellite Server to use a custom SSL certificate signed by a Certificate Authority. The **katello-certs-check** command validates the input certificate files and returns the commands necessary to deploy a custom SSL certificate to Satellite Server.

Procedure

To deploy a custom certificate on your Satellite Server, complete the following steps:

1. Validate the custom SSL certificate input files. Note that for the **katello-certs-check** command to work correctly, Common Name (CN) in the certificate must match the FQDN of Satellite Server.

```
# katello-certs-check \
-c /root/satellite_cert/satellite_cert.pem \ 1
-k /root/satellite_cert/satellite_cert_key.pem \ 2
-b /root/satellite_cert/ca_cert_bundle.pem 3
```

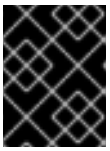
1. Path to the Satellite Server certificate file that is signed by a Certificate Authority.
2. Path to the private key that was used to sign the Capsule Server certificate.
3. Path to the Certificate Authority bundle.

If the command is successful, it returns two **satellite-installer** commands, one of which you must use to deploy a certificate to Satellite Server.

Example output of **katello-certs-check**

```
Validation succeeded.

To install the Red Hat Satellite Server with the custom certificates, run:

 satellite-installer --scenario satellite \
   --certs-server-cert "/root/satellite_cert/satellite_cert.pem" \
   --certs-server-key "/root/satellite_cert/satellite_cert_key.pem" \
   --certs-server-ca-cert "/root/satellite_cert/ca_cert_bundle.pem"

To update the certificates on a currently running Red Hat Satellite installation, run:

 satellite-installer --scenario satellite \
   --certs-server-cert "/root/satellite_cert/satellite_cert.pem" \
   --certs-server-key "/root/satellite_cert/satellite_cert_key.pem" \
   --certs-server-ca-cert "/root/satellite_cert/ca_cert_bundle.pem" \
   --certs-update-server --certs-update-server-ca
```

2. From the output of the **katello-certs-check** command, depending on your requirements, enter the **satellite-installer** command that installs a new Satellite with custom SSL certificates or updates certificates on a currently running Satellite.
   If you are unsure which command to run, you can verify that Satellite is installed by checking if the file **/etc/foreman-installer/scenarios.d/.installed** exists. If the file exists, run the second **satellite-installer** command that updates certificates.



重要

Do not delete the certificate archive file after you deploy the certificate. It is required, for example, when upgrading Satellite Server.

3. On a computer with network access to Satellite Server, navigate to the following URL: **https://satellite.example.com**.

4. In your browser, view the certificate details to verify the deployed certificate.

3.9.3. Deploying a Custom SSL Certificate to Hosts

After you configure Satellite Server to use a custom SSL certificate, you must also install the **katello-ca-consumer** package on every host that is registered to this Satellite Server.

Procedure

- On each host, install the **katello-ca-consumer** package:

```
# yum localinstall \
http://satellite.example.com/pub/katello-ca-consumer-latest.noarch.rpm
```

3.10. USING EXTERNAL DATABASES WITH SATELLITE

As part of the installation process for Red Hat Satellite, the **satellite-installer** command installs MongoDB and PostgreSQL databases on the same server as Satellite. In certain Satellite deployments, using external databases instead of the default local databases can help with the server load. Depending

on your requirements, you can use external databases for either MongoDB or PostgreSQL database, or both.

Red Hat does not provide support or tools for external database maintenance. This includes backups, upgrades, and database tuning. You must have your own database administrator to support and maintain external databases.

Use MongoDB as an External Database Considerations and PostgreSQL as an External Database Considerations to decide if you want to use external databases for your Satellite deployment.

To create and use external databases for Satellite, you must complete the following procedures:

1. 「Preparing a Host for External Databases」. Prepare a Red Hat Enterprise Linux 7 server to host the external databases.
2. 「Installing MongoDB」. Prepare MongoDB with user **pulp** owning the **pulp_database**
3. 「Installing PostgreSQL」. Prepare PostgreSQL with databases for Satellite and Candlepin and dedicated users owning them.
4. 「Configuring Satellite to use External Databases」. Edit the parameters of **satellite-installer** to point to the new databases, and run **satellite-installer**.

3.10.1. MongoDB as an External Database Considerations

Pulp uses the MongoDB database. If you want to use MongoDB as an external database, the following information can help you decide if this option is right for your Satellite configuration. Satellite supports MongoDB version 3.4.

Advantages of External MongoDB

- Increase in free memory and free CPU on Satellite
- Flexibility to tune the MongoDB server's system without adversely affecting Satellite operations

Disadvantages of External MongoDB

- Increase in deployment complexity that can make troubleshooting more difficult
- An external MongoDB server is an additional system to patch and maintain
- If either the Satellite or the Mongo database server suffers a hardware or storage failure, Satellite is not operational
- If there is latency between the Satellite and the external database server, performance can suffer

FIPS-related Restrictions

- You cannot use an external MongoDB with Satellite in FIPS mode.

3.10.2. PostgreSQL as an External Database Considerations

Foreman, Katello, and Candlepin use the PostgreSQL database. If you want to use PostgreSQL as an external database, the following information can help you decide if this option is right for your Satellite configuration. Satellite supports PostgreSQL version 12.1.

Advantages of External PostgreSQL:

- Increase in free memory and free CPU on Satellite
- Flexibility to set **shared_buffers** on the PostgreSQL database to a high number without the risk of interfering with other services on Satellite
- Flexibility to tune the PostgreSQL server's system without adversely affecting Satellite operations

Disadvantages of External PostgreSQL

- Increase in deployment complexity that can make troubleshooting more difficult
- The external PostgreSQL server is an additional system to patch and maintain
- If either Satellite or the PostgreSQL database server suffers a hardware or storage failure, Satellite is not operational
- If there is latency between the Satellite server and database server, performance can suffer

If you suspect that the PostgreSQL database on your Satellite is causing performance problems, use the information in Satellite 6: How to enable postgres query logging to detect slow running queries to determine if you have slow queries. Queries that take longer than one second are typically caused by performance issues with large installations, and moving to an external database might not help. If you have slow queries, contact Red Hat Support.

3.10.3. Preparing a Host for External Databases

Install a freshly provisioned system with the latest Red Hat Enterprise Linux 7 server to host the external databases.

Subscriptions for Red Hat Software Collections and Red Hat Enterprise Linux do not provide the correct service level agreement for using Satellite with external databases. You must also attach a Satellite subscription to the base operating system that you want to use for the external databases.

Prerequisites

- The Red Hat Enterprise Linux 7 server must meet Satellite's Storage Requirements.

Procedure

1. Use the instructions in Attaching the Satellite Infrastructure Subscription to attach a Satellite subscription to your server.
2. Disable all repositories and enable only the following repositories:

```
# subscription-manager repos --disable '*'
# subscription-manager repos --enable=rhel-server-rhscl-7-rpms \
--enable=rhel-7-server-rpms --enable=rhel-7-server-satellite-6.8-rpms
```

3.10.4. Installing MongoDB

You can install only the same version of MongoDB that is installed with the **satellite-installer** tool during an internal database installation. You can install MongoDB using Red Hat Software Collections

(RHSCL) repositories or from an external source, as long as the version is supported. Satellite supports MongoDB version 3.4.

Procedure

1. To install MongoDB, enter the following command:

```
# yum install rh-mongodb34 rh-mongodb34-syspaths
```

2. Start and enable the **rh-mongodb34** service:

```
# systemctl start rh-mongodb34-mongod
# systemctl enable rh-mongodb34-mongod
```

3. Create a Pulp user on MongoDB for database **pulp_database**:

```
# mongo pulp_database \
--eval "db.createUser({user:'pulp',pwd:'pulp_password',roles:[{role:'dbOwner',
db:'pulp_database'},{ role: 'readWrite', db: 'pulp_database'}]})"
```

4. In the **/etc/opt/rh/rh-mongodb34/mongod.conf** file, specify the bind IP:

```
bindIp: your_mongodb_server_bind_IP,::1
```

5. Edit the **/etc/opt/rh/rh-mongodb34/mongod.conf** file to enable authentication in the **security** section:

```
security:
  authorization: enabled
```

6. Restart the **rh-mongodb34-mongod** service:

```
# systemctl restart rh-mongodb34-mongod
```

7. Open port 27017 for MongoDB:

```
# firewall-cmd --add-port=27017/tcp
# firewall-cmd --runtime-to-permanent
```

8. From Satellite Server, test that you can access the database. If the connection succeeds, the command returns **1**.

```
# scl enable rh-mongodb34 " mongo --host mongo.example.com \
-u pulp -p pulp_password --port 27017 --eval 'ping:1' pulp_database"
```

3.10.5. Installing PostgreSQL

You can install only the same version of PostgreSQL that is installed with the **satellite-installer** tool during an internal database installation. You can install PostgreSQL using Red Hat Enterprise Linux Server 7 repositories or from an external source, as long as the version is supported. Satellite supports PostgreSQL version 12.1.

Procedure

1. To install PostgreSQL, enter the following command:

```
# yum install rh-postgresql12-postgresql-server \
rh-postgresql12-syspaths \
rh-postgresql12-postgresql-evr
```

2. To initialize PostgreSQL, enter the following command:

```
# postgresql-setup initdb
```

3. Edit the **/var/opt/rh/rh-postgresql12/lib/pgsql/data/postgresql.conf** file:

```
# vi /var/opt/rh/rh-postgresql12/lib/pgsql/data/postgresql.conf
```

4. Remove the **#** and edit to listen to inbound connections:

```
listen_addresses = '*'
```

5. Edit the **/var/opt/rh/rh-postgresql12/lib/pgsql/data/pg_hba.conf** file:

```
# vi /var/opt/rh/rh-postgresql12/lib/pgsql/data/pg_hba.conf
```

6. Add the following line to the file:

```
host  all   all   Satellite_ip/24   md5
```

7. To start, and enable PostgreSQL service, enter the following commands:

```
# systemctl start postgresql
# systemctl enable postgresql
```

8. Open the **postgresql** port on the external PostgreSQL server:

```
# firewall-cmd --add-service=postgresql
# firewall-cmd --runtime-to-permanent
```

9. Switch to the **postgres** user and start the PostgreSQL client:

```
$ su - postgres -c psql
```

10. Create two databases and dedicated roles, one for Satellite and one for Candlepin:

```
CREATE USER "foreman" WITH PASSWORD 'Foreman_Password';
CREATE USER "candlepin" WITH PASSWORD 'Candlepin_Password';
CREATE DATABASE foreman OWNER foreman;
CREATE DATABASE candlepin OWNER candlepin;
```

11. Exit the **postgres** user:

```
# \q
```

12. From Satellite Server, test that you can access the database. If the connection succeeds, the commands return **1**.

```
# PGPASSWORD='Foreman_Password' psql -h postgres.example.com  -p 5432 -U foreman -d foreman -c "SELECT 1 as ping"
# PGPASSWORD='Candlepin_Password' psql -h postgres.example.com -p 5432 -U candlepin -d candlepin -c "SELECT 1 as ping"
```

3.10.6. Configuring Satellite to use External Databases

Use the **satellite-installer** command to configure Satellite to connect to external MongoDB and PostgreSQL databases.

Prerequisites

- You have installed and configured MongoDB and PostgreSQL databases on a Red Hat Enterprise Linux server.

Procedure

1. To configure the external databases for Satellite, enter the following command:

```
satellite-installer --scenario satellite \
  --foreman-db-host postgres.example.com \
  --foreman-db-password Foreman_Password \
  --foreman-db-database foreman \
  --katello-candlepin-db-host postgres.example.com \
  --katello-candlepin-db-name candlepin \
  --katello-candlepin-db-password Candlepin_Password \
  --katello-candlepin-manage-db false \
  --katello-pulp-db-username pulp \
  --katello-pulp-db-password pulp_password \
  --katello-pulp-db-seeds mongo.example.com:27017 \
  --katello-pulp-db-name pulp_database
```

2. Verify the status of the databases:
   - For PostgreSQL, enter the following command:

```
# satellite-maintain service status --only postgresql
```

   - For MongoDB, enter the following command:

```
# satellite-maintain service status --only rh-mongodb34-mongod
```

3.11. RESTRICTING ACCESS TO MONGOD

To reduce the risk of data loss, configure only the **apache** and **root** users to have access to the MongoDB database daemon, **mongod**.

To restrict access to **mongod** on your Satellite Server, you must update your firewall configuration.

Procedure

1. Update the firewall configuration by entering the following command:

```
# firewall-cmd  --direct --add-rule ipv4 filter OUTPUT 0 -o lo -p \
tcp -m tcp --dport 27017 -m owner --uid-owner apache -j ACCEPT \
&& firewall-cmd  --direct --add-rule ipv6 filter OUTPUT 0 -o lo -p \
tcp -m tcp --dport 27017 -m owner --uid-owner apache -j ACCEPT \
&& firewall-cmd  --direct --add-rule ipv4 filter OUTPUT 0 -o lo -p \
tcp -m tcp --dport 27017 -m owner --uid-owner root -j ACCEPT \
&& firewall-cmd  --direct --add-rule ipv6 filter OUTPUT 0 -o lo -p \
tcp -m tcp --dport 27017 -m owner --uid-owner root -j ACCEPT \
&& firewall-cmd  --direct --add-rule ipv4 filter OUTPUT 1 -o lo -p \
tcp -m tcp --dport 27017 -j DROP \
&& firewall-cmd  --direct --add-rule ipv6 filter OUTPUT 1 -o lo -p \
tcp -m tcp --dport 27017 -j DROP \
&& firewall-cmd  --direct --add-rule ipv4 filter OUTPUT 0 -o lo -p \
tcp -m tcp --dport 28017 -m owner --uid-owner apache -j ACCEPT \
&& firewall-cmd  --direct --add-rule ipv6 filter OUTPUT 0 -o lo -p \
tcp -m tcp --dport 28017 -m owner --uid-owner apache -j ACCEPT \
&& firewall-cmd  --direct --add-rule ipv4 filter OUTPUT 0 -o lo -p \
tcp -m tcp --dport 28017 -m owner --uid-owner root -j ACCEPT \
&& firewall-cmd  --direct --add-rule ipv6 filter OUTPUT 0 -o lo -p \
tcp -m tcp --dport 28017 -m owner --uid-owner root -j ACCEPT \
&& firewall-cmd  --direct --add-rule ipv4 filter OUTPUT 1 -o lo -p \
tcp -m tcp --dport 28017 -j DROP \
&& firewall-cmd  --direct --add-rule ipv6 filter OUTPUT 1 -o lo -p \
tcp -m tcp --dport 28017 -j DROP
```

2. Make the changes persistent:

```
# firewall-cmd --runtime-to-permanent
```

3.12. 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

To configure a tuning profile for your Satellite deployment, complete the following steps:

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
```

第4章 CONFIGURING SATELLITE SERVER WITH EXTERNAL SERVICES

If you do not want to configure the DNS, DHCP, and TFTP services on Satellite Server, use this section to configure your Satellite Server to work with external DNS, DHCP and TFTP services.

4.1. CONFIGURING SATELLITE SERVER WITH EXTERNAL DNS

You can configure Satellite Server with external DNS. Satellite Server uses the **nsupdate** utility to update DNS records on the remote server.

To make any changes persistent, you must enter the **satellite-installer** command with the options appropriate for your environment.

Prerequisites

- You must have a configured external DNS server.

Procedure

1. Install the **bind-utils** package:

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

2. Copy the **/etc/rndc.key** file from the external DNS server to Satellite Server:

```
# scp root@dns.example.com:/etc/rndc.key /etc/rndc.key
```

3. Configure the ownership, permissions, and SELinux context:

```
# restorecon -v /etc/rndc.key
# chown -v root:named /etc/rndc.key
# chmod -v 640 /etc/rndc.key
```

4. To test the **nsupdate** utility, add a host remotely:

```
# echo -e "server DNS_IP_Address\n \
update add aaa.virtual.lan 3600 IN A Host_IP_Address\n \
send\n" | nsupdate -k /etc/rndc.key
# nslookup aaa.virtual.lan DNS_IP_Address
# echo -e "server DNS_IP_Address\n \
update delete aaa.virtual.lan 3600 IN A Host_IP_Address\n \
send\n" | nsupdate -k /etc/rndc.key
```

5. Assign the **foreman-proxy** user to the **named** group manually. Normally, satellite-installer ensures that the **foreman-proxy** user belongs to the **named** UNIX group, however, in this scenario Satellite does not manage users and groups, therefore you need to assign the **foreman-proxy** user to the **named** group manually.

```
# usermod -a -G named foreman-proxy
```

6. Enter the **satellite-installer** command to make the following persistent changes to the **/etc/foreman-proxy/settings.d/dns.yml** file:

```
# satellite-installer --foreman-proxy-dns=true \
--foreman-proxy-dns-managed=false \
--foreman-proxy-dns-provider=nsupdate \
--foreman-proxy-dns-server="DNS_IP_Address" \
--foreman-proxy-keyfile=/etc/rndc.key \
--foreman-proxy-dns-ttl=86400
```

7. Restart the foreman-proxy service:

```
# systemctl restart foreman-proxy
```

8. Log in to the Satellite Server web UI.
9. Navigate to **Infrastructure** > **Capsules**, locate the Satellite Server, and from the list in the **Actions** column, select **Refresh**.
10. Associate the DNS service with the appropriate subnets and domain.

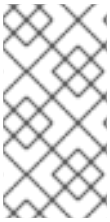
4.2. CONFIGURING SATELLITE SERVER WITH EXTERNAL DHCP

To configure Satellite Server with external DHCP, you must complete the following procedures:

1. 「Configuring an External DHCP Server to Use with Satellite Server」
2. 「Configuring Satellite Server with an External DHCP Server」

4.2.1. Configuring an External DHCP Server to Use with Satellite Server

To configure an external DHCP server to use with Satellite Server, on a Red Hat Enterprise Linux server, you must install the ISC DHCP Service and Berkeley Internet Name Domain (BIND) packages. You must also share the DHCP configuration and lease files with Satellite Server. The example in this procedure uses the distributed Network File System (NFS) protocol to share the DHCP configuration and lease files.



注記

If you use dnsmasq as an external DHCP server, enable the **dhcp-no-override** setting. This is required because Satellite creates configuration files on the TFTP server under the **grub2/** subdirectory. If the **dhcp-no-override** setting is disabled, clients fetch the bootloader and its configuration from the root directory, which might cause an error.

Procedure

1. On a Red Hat Enterprise Linux Server server, install the ISC DHCP Service and Berkeley Internet Name Domain (BIND) packages:

```
# yum install dhcp bind
```

2. Generate a security token:

```
# dnssec-keygen -a HMAC-MD5 -b 512 -n HOST omapi_key
```

As a result, a key pair that consists of two files is created in the current directory.

3. Copy the secret hash from the key:

```
# cat Komapi_key.+*.private |grep ^Key|cut -d ' ' -f2
```

4. Edit the **dhcpd** configuration file for all of the subnets and add the key. The following is an example:

```
# cat /etc/dhcp/dhcpd.conf
default-lease-time 604800;
max-lease-time 2592000;
log-facility local7;

subnet 192.168.38.0 netmask 255.255.255.0 {
 range 192.168.38.10 192.168.38.100;
 option routers 192.168.38.1;
 option subnet-mask 255.255.255.0;
 option domain-search "virtual.lan";
 option domain-name "virtual.lan";
 option domain-name-servers 8.8.8.8;
}

omapi-port 7911;
key omapi_key {
 algorithm HMAC-MD5;
 secret "jNSE5YI3H1A8Oj/tkV4...A2ZOHb6zv315CkNAY7DMYYCj48Umw==";
};
omapi-key omapi_key;
```

Note that the **option routers** value is the Satellite or Capsule IP address that you want to use with an external DHCP service.

5. Delete the two key files from the directory that they were created in.

6. On Satellite Server, define each subnet. Do not set DHCP Capsule for the defined Subnet yet. To prevent conflicts, set up the lease and reservation ranges separately. For example, if the lease range is 192.168.38.10 to 192.168.38.100, in the Satellite web UI define the reservation range as 192.168.38.101 to 192.168.38.250.

7. Configure the firewall for external access to the DHCP server:

```
# firewall-cmd --add-service dhcp \
&& firewall-cmd --runtime-to-permanent
```

8. On Satellite Server, determine the UID and GID of the **foreman** user:

```
# id -u foreman
993
# id -g foreman
990
```

9. On the DHCP server, create the **foreman** user and group with the same IDs as determined in a previous step:

```
# groupadd -g 990 foreman
# useradd -u 993 -g 990 -s /sbin/nologin foreman
```

10. To ensure that the configuration files are accessible, restore the read and execute flags:

```
# chmod o+rx /etc/dhcp/
# chmod o+r /etc/dhcp/dhcpd.conf
# chattr +i /etc/dhcp/ /etc/dhcp/dhcpd.conf
```

11. Start the DHCP service:

```
# systemctl start dhcpd
```

12. Export the DHCP configuration and lease files using NFS:

```
# yum install nfs-utils
# systemctl enable rpcbind nfs-server
# systemctl start rpcbind nfs-server nfs-lock nfs-idmapd
```

13. Create directories for the DHCP configuration and lease files that you want to export using NFS:

```
# mkdir -p /exports/var/lib/dhcpd /exports/etc/dhcp
```

14. To create mount points for the created directories, add the following line to the **/etc/fstab** file:

```
/var/lib/dhcpd /exports/var/lib/dhcpd none bind,auto 0 0
/etc/dhcp /exports/etc/dhcp none bind,auto 0 0
```

15. Mount the file systems in **/etc/fstab**:

```
# mount -a
```

16. Ensure the following lines are present in **/etc/exports**:

```
/exports 192.168.38.1(rw,async,no_root_squash,fsid=0,no_subtree_check)

/exports/etc/dhcp 192.168.38.1(ro,async,no_root_squash,no_subtree_check,nohide)

/exports/var/lib/dhcpd 192.168.38.1(ro,async,no_root_squash,no_subtree_check,nohide)
```

Note that the IP address that you enter is the Satellite or Capsule IP address that you want to use with an external DHCP service.

17. Reload the NFS server:

```
# exportfs -rva
```

18. Configure the firewall for the DHCP omapi port 7911:

```
# firewall-cmd --add-port="7911/tcp" \
&& firewall-cmd --runtime-to-permanent
```

19. Optional: Configure the firewall for external access to NFS. Clients are configured using NFSv3.

```
# firewall-cmd --zone public --add-service mountd \
&& firewall-cmd --zone public --add-service rpc-bind \
&& firewall-cmd --zone public --add-service nfs \
&& firewall-cmd --runtime-to-permanent
```

4.2.2. Configuring Satellite Server with an External DHCP Server

You can configure Satellite Server with an external DHCP server.

Prerequisite

- Ensure that you have configured an external DHCP server and that you have shared the DHCP configuration and lease files with Satellite Server. For more information, see 「Configuring an External DHCP Server to Use with Satellite Server」.

Procedure

1. Install the **nfs-utils** utility:

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

2. Create the DHCP directories for NFS:

```
# mkdir -p /mnt/nfs/etc/dhcp /mnt/nfs/var/lib/dhcpd
```

3. Change the file owner:

```
# chown -R foreman-proxy /mnt/nfs
```

4. Verify communication with the NFS server and the Remote Procedure Call (RPC) communication paths:

```
# showmount -e DHCP_Server_FQDN
# rpcinfo -p DHCP_Server_FQDN
```

5. Add the following lines to the **/etc/fstab** file:

```
DHCP_Server_FQDN:/exports/etc/dhcp /mnt/nfs/etc/dhcp nfs
ro,vers=3,auto,nosharecache,context="system_u:object_r:dhcp_etc_t:s0" 0 0

DHCP_Server_FQDN:/exports/var/lib/dhcpd /mnt/nfs/var/lib/dhcpd nfs
ro,vers=3,auto,nosharecache,context="system_u:object_r:dhcpd_state_t:s0" 0 0
```

6. Mount the file systems on **/etc/fstab**:

```
# mount -a
```

7. To verify that the **foreman-proxy** user can access the files that are shared over the network, display the DHCP configuration and lease files:

```
# su foreman-proxy -s /bin/bash
bash-4.2$ cat /mnt/nfs/etc/dhcp/dhcpd.conf
bash-4.2$ cat /mnt/nfs/var/lib/dhcpd/dhcpd.leases
bash-4.2$ exit
```

8. Enter the **satellite-installer** command to make the following persistent changes to the **/etc/foreman-proxy/settings.d/dhcp.yml** file:

```
# satellite-installer --foreman-proxy-dhcp=true \
--foreman-proxy-dhcp-provider=remote_isc \
--foreman-proxy-plugin-dhcp-remote-isc-dhcp-config /mnt/nfs/etc/dhcp/dhcpd.conf \
--foreman-proxy-plugin-dhcp-remote-isc-dhcp-leases /mnt/nfs/var/lib/dhcpd/dhcpd.leases \
--foreman-proxy-plugin-dhcp-remote-isc-key-name=omapi_key \
--foreman-proxy-plugin-dhcp-remote-isc-key-
secret=jNSE5YI3H1A8Oj/tkV4...A2ZOHb6zv315CkNAY7DMYYCj48Umw== \
--foreman-proxy-plugin-dhcp-remote-isc-omapi-port=7911 \
--enable-foreman-proxy-plugin-dhcp-remote-isc \
--foreman-proxy-dhcp-server=DHCP_Server_FQDN
```

9. Restart the **foreman-proxy** service:

```
# systemctl restart foreman-proxy
```

10. Log in to the Satellite Server web UI.

11. Navigate to **Infrastructure** > **Capsules**, locate the Satellite Server, and from the list in the **Actions** column, select **Refresh**.

12. Associate the DHCP service with the appropriate subnets and domain.

4.3. CONFIGURING SATELLITE SERVER WITH EXTERNAL TFTP

You can configure Satellite Server with external TFTP services.

Procedure

1. Create the TFTP directory for NFS:

```
# mkdir -p /mnt/nfs/var/lib/tftpboot
```

2. In the **/etc/fstab** file, add the following line:

```
TFTP_Server_IP_Address:/exports/var/lib/tftpboot /mnt/nfs/var/lib/tftpboot nfs
rw,vers=3,auto,nosharecache,context="system_u:object_r:tftpdir_rw_t:s0" 0 0
```

3. Mount the file systems in **/etc/fstab**:

```
# mount -a
```

4. Enter the **satellite-installer** command to make the following persistent changes to the **/etc/foreman-proxy/settings.d/tftp.yml** file:

```
# satellite-installer --foreman-proxy-tftp=true \
--foreman-proxy-tftp-root /mnt/nfs/var/lib/tftpboot
```

5. If the TFTP service is running on a different server than the DHCP service, update the **tftp_servername** setting with the FQDN or IP address of the server that the TFTP service is running on:

```
# satellite-installer --foreman-proxy-tftp-servername=TFTP_Server_FQDN
```

6. Log in to the Satellite Server web UI.
7. Navigate to **Infrastructure** > **Capsules**, locate the Satellite Server, and from the list in the **Actions** column, select **Refresh**.
8. Associate the TFTP service with the appropriate subnets and domain.

4.4. CONFIGURING SATELLITE SERVER WITH EXTERNAL IDM DNS

When Satellite Server adds a DNS record for a host, it first determines which Capsule is providing DNS for that domain. It then communicates with the Capsule that is configured to provide DNS service for your deployment and adds the record. The hosts are not involved in this process. Therefore, you must install and configure the IdM client on the Satellite or Capsule that is currently configured to provide a DNS service for the domain you want to manage using the IdM server.

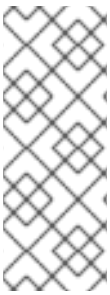
Satellite Server can be configured to use a Red Hat Identity Management (IdM) server to provide DNS service. For more information about Red Hat Identity Management, see the Linux Domain Identity, Authentication, and Policy Guide.

To configure Satellite Server to use a Red Hat Identity Management (IdM) server to provide DNS service, use one of the following procedures:

- 「Configuring Dynamic DNS Update with GSS-TSIG Authentication」
- 「Configuring Dynamic DNS Update with TSIG Authentication」

To revert to internal DNS service, use the following procedure:

- 「Reverting to Internal DNS Service」



注記

You are not required to use Satellite Server to manage DNS. When you are using the realm enrollment feature of Satellite, where provisioned hosts are enrolled automatically to IdM, the **ipa-client-install** script creates DNS records for the client. Configuring Satellite Server with external IdM DNS and realm enrollment are mutually exclusive. For more information about configuring realm enrollment, see External Authentication for Provisioned Hosts in **Administering Red Hat Satellite**.

4.4.1. Configuring Dynamic DNS Update with GSS-TSIG Authentication

You can configure the IdM server to use the generic security service algorithm for secret key transaction (GSS-TSIG) technology defined in RFC3645. To configure the IdM server to use the GSS-TSIG technology, you must install the IdM client on the Satellite Server base operating system.

Prerequisites

Prerequisites

- You must ensure the IdM server is deployed and the host-based firewall is configured correctly. For more information, see Port Requirements in the **Linux Domain Identity, Authentication, and Policy Guide**.
- You must contact the IdM server administrator to ensure that you obtain an account on the IdM server with permissions to create zones on the IdM server.
- You must confirm whether Satellite Server or Capsule Server is configured to provide DNS service for your deployment.
- You must configure DNS, DHCP and TFTP services on the base operating system of either the Satellite or Capsule that is managing the DNS service for your deployment.
- You must create a backup of the answer file. You can use the backup to restore the answer file to its original state if it becomes corrupted. For more information, see Configuring Satellite Server.

Procedure

To configure dynamic DNS update with GSS-TSIG authentication, complete the following steps:

Creating a Kerberos Principal on the IdM Server

1. Obtain a Kerberos ticket for the account obtained from the IdM administrator:

```
# kinit idm_user
```

2. Create a new Kerberos principal for Satellite Server to use to authenticate on the IdM server.

```
# ipa service-add satellite.example.com
```

Installing and Configuring the IdM Client

1. On the base operating system of either the Satellite or Capsule that is managing the DNS service for your deployment, install the **ipa-client** package:

```
# satellite-maintain packages install ipa-client
```

2. Configure the IdM client by running the installation script and following the on-screen prompts:

```
# ipa-client-install
```

3. Obtain a Kerberos ticket:

```
# kinit admin
```

4. Remove any preexisting **keytab**:

```
# rm /etc/foreman-proxy/dns.keytab
```

5. Obtain the **keytab** for this system:

```
# ipa-getkeytab -p capsule/satellite.example.com@EXAMPLE.COM \
-s idm1.example.com -k /etc/foreman-proxy/dns.keytab
```

注記

When adding a keytab to a standby system with the same host name as the original system in service, add the **r** option to prevent generating new credentials and rendering the credentials on the original system invalid.

6. For the **dns.keytab** file, set the group and owner to **foreman-proxy**:

```
# chown foreman-proxy:foreman-proxy /etc/foreman-proxy/dns.keytab
```

7. Optional: To verify that the **keytab** file is valid, enter the following command:

```
# kinit -kt /etc/foreman-proxy/dns.keytab \
capsule/satellite.example.com@EXAMPLE.COM
```

Configuring DNS Zones in the IdM web UI

1. Create and configure the zone that you want to manage:
   a. Navigate to **Network Services** > **DNS** > **DNS Zones**.
   b. Select **Add** and enter the zone name. For example, **example.com**.
   c. Click **Add and Edit**
   d. Click the Settings tab and in the **BIND update policy** box, add the following to the semi-colon separated list:

```
grant capsule/047satellite.example.com@EXAMPLE.COM wildcard * ANY;
```

   e. Set **Dynamic update** to **True**.
   f. Enable **Allow PTR sync**.
   g. Click **Save** to save the changes.
2. Create and configure the reverse zone:
   a. Navigate to **Network Services** > **DNS** > **DNS Zones**.
   b. Click **Add**.
   c. Select **Reverse zone IP network** and add the network address in CIDR format to enable reverse lookups.
   d. Click **Add and Edit**
   e. Click the **Settings** tab and in the **BIND update policy** box, add the following to the semi-colon separated list:

```
grant capsule\047satellite.example.com@EXAMPLE.COM wildcard * ANY;
```

f. Set **Dynamic update** to **True**.

g. Click **Save** to save the changes.

Configuring the Satellite or Capsule Server that Manages the DNS Service for the Domain

1. Use the **satellite-installer** command to configure the Satellite or Capsule that manages the DNS Service for the domain:

   - On Satellite, enter the following command:

```
satellite-installer --scenario satellite \
--foreman-proxy-dns=true \
--foreman-proxy-dns-managed=true \
--foreman-proxy-dns-provider=nsupdate_gss \
--foreman-proxy-dns-server="idm1.example.com" \
--foreman-proxy-dns-tsig-principal="capsule/satellite.example.com@EXAMPLE.COM" \
--foreman-proxy-dns-tsig-keytab=/etc/foreman-proxy/dns.keytab \
--foreman-proxy-dns-reverse="55.168.192.in-addr.arpa" \
--foreman-proxy-dns-zone=example.com \
--foreman-proxy-dns-ttl=86400
```

   - On Capsule, enter the following command:

```
satellite-installer --scenario capsule \
--foreman-proxy-dns=true \
--foreman-proxy-dns-managed=true \
--foreman-proxy-dns-provider=nsupdate_gss \
--foreman-proxy-dns-server="idm1.example.com" \
--foreman-proxy-dns-tsig-principal="capsule/satellite.example.com@EXAMPLE.COM" \
--foreman-proxy-dns-tsig-keytab=/etc/foreman-proxy/dns.keytab \
--foreman-proxy-dns-reverse="55.168.192.in-addr.arpa" \
--foreman-proxy-dns-zone=example.com \
--foreman-proxy-dns-ttl=86400
```

2. Restart the Satellite or Capsule's Proxy Service.

```
# systemctl restart foreman-proxy
```

After you run the **satellite-installer** command to make any changes to your Capsule configuration, you must update the configuration of each affected Capsule in the Satellite web UI.

Updating the Configuration in the Satellite web UI

1. Navigate to **Infrastructure** > **Capsules**, locate the Satellite Server, and from the list in the **Actions** column, select **Refresh**.

2. Configure the domain:

   a. Navigate to **Infrastructure** > **Domains** and select the domain name.

   b. In the **Domain** tab, ensure **DNS Capsule** is set to the Capsule where the subnet is connected.

3. Configure the subnet:

a. Navigate to **Infrastructure** > **Subnets** and select the subnet name.

b. In the **Subnet** tab, set **IPAM** to **None**.

c. In the **Domains** tab, select the domain that you want to manage using the IdM server.

d. In the **Capsules** tab, ensure **Reverse DNS Capsule** is set to the Capsule where the subnet is connected.

e. Click **Submit** to save the changes.

4.4.2. Configuring Dynamic DNS Update with TSIG Authentication

You can configure an IdM server to use the secret key transaction authentication for DNS (TSIG) technology that uses the **rndc.key** key file for authentication. The TSIG protocol is defined in RFC2845.

Prerequisites

- You must ensure the IdM server is deployed and the host-based firewall is configured correctly. For more information, see Port Requirements in the **Linux Domain Identity, Authentication, and Policy Guide**.
- You must obtain **root** user access on the IdM server.
- You must confirm whether Satellite Server or Capsule Server is configured to provide DNS service for your deployment.
- You must configure DNS, DHCP and TFTP services on the base operating system of either the Satellite or Capsule that is managing the DNS service for your deployment.
- You must create a backup of the answer file. You can use the backup to restore the answer file to its original state if it becomes corrupted. For more information, see Configuring Satellite Server.

Procedure

To configure dynamic DNS update with TSIG authentication, complete the following steps:

Enabling External Updates to the DNS Zone in the IdM Server

1. On the IdM Server, add the following to the top of the **/etc/named.conf** file:

```
include "/etc/rndc.key"; controls { inet IdM_Server_IP_Address port 953 allow {
Satellite_IP_Address; } keys { "rndc-key"; }; };
```

2. Reload the **named** service to make the changes take effect:

```
# systemctl reload named
```

3. In the IdM web UI, navigate to **Network Services** > **DNS** > **DNS Zones** and click the name of the zone. In the **Settings** tab, apply the following changes:

   a. Add the following in the **BIND update policy** box:

```
grant "rndc-key" zonesub ANY;
```

b. Set **Dynamic update** to **True**.

c. Click **Update** to save the changes.

4. Copy the **/etc/rndc.key** file from the IdM server to the base operating system of your Satellite Server. Enter the following command:

```
# scp /etc/rndc.key root@satellite.example.com:/etc/rndc.key
```

5. To set the correct ownership, permissions, and SELinux context for the **rndc.key** file, enter the following command:

```
# restorecon -v /etc/rndc.key
# chown -v root:named /etc/rndc.key
# chmod -v 640 /etc/rndc.key
```

6. Assign the **foreman-proxy** user to the **named** group manually. Normally, satellite-installer ensures that the **foreman-proxy** user belongs to the **named** UNIX group, however, in this scenario Satellite does not manage users and groups, therefore you need to assign the **foreman-proxy** user to the **named** group manually.

```
# usermod -a -G named foreman-proxy
```

7. On Satellite Server, enter the following **satellite-installer** command to configure Satellite to use the external DNS server:

```
# satellite-installer --scenario satellite \
--foreman-proxy-dns=true \
--foreman-proxy-dns-managed=false \
--foreman-proxy-dns-provider=nsupdate \
--foreman-proxy-dns-server="IdM_Server_IP_Address" \
--foreman-proxy-keyfile=/etc/rndc.key \
--foreman-proxy-dns-ttl=86400
```

Testing External Updates to the DNS Zone in the IdM Server

1. Install the **bind-utils** utility:

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

2. Ensure that the key in the **/etc/rndc.key** file on Satellite Server is the same key file that is used on the IdM server:

```
key "rndc-key" {
        algorithm hmac-md5;
        secret "secret-key==";
};
```

3. On Satellite Server, create a test DNS entry for a host. For example, host **test.example.com** with an A record of **192.168.25.20** on the IdM server at **192.168.25.1**.

```
# echo -e "server 192.168.25.1\n \
update add test.example.com 3600 IN A 192.168.25.20\n \
send\n" | nsupdate -k /etc/rndc.key
```

4. On Satellite Server, test the DNS entry:

```
# nslookup test.example.com 192.168.25.1
Server:  192.168.25.1
Address: 192.168.25.1#53

Name: test.example.com
Address: 192.168.25.20
```

5. To view the entry in the IdM web UI, navigate to **Network Services** > **DNS** > **DNS Zones**. Click the name of the zone and search for the host by name.

6. If resolved successfully, remove the test DNS entry:

```
# echo -e "server 192.168.25.1\n \
update delete test.example.com 3600 IN A 192.168.25.20\n \
send\n" | nsupdate -k /etc/rndc.key
```

7. Confirm that the DNS entry was removed:

```
# nslookup test.example.com 192.168.25.1
```

The above **nslookup** command fails and returns the **SERVFAIL** error message if the record was successfully deleted.

4.4.3. Reverting to Internal DNS Service

You can revert to using Satellite Server and Capsule Server as your DNS providers. You can use a backup of the answer file that was created before configuring external DNS, or you can create a backup of the answer file. For more information about answer files, see Configuring Satellite Server.

Procedure

On the Satellite or Capsule Server that you want to configure to manage DNS service for the domain, complete the following steps:

Configuring Satellite or Capsule as a DNS Server

- If you have created a backup of the answer file before configuring external DNS, restore the answer file and then enter the **satellite-installer** command:

```
# satellite-installer
```

- If you do not have a suitable backup of the answer file, create a backup of the answer file now. To configure Satellite or Capsule as DNS server without using an answer file, enter the following **satellite-installer** command on Satellite and each affected Capsule:

```
# satellite-installer \
--foreman-proxy-dns=true \
--foreman-proxy-dns-managed=true \
```

```
--foreman-proxy-dns-provider=nsupdate \
--foreman-proxy-dns-server="127.0.0.1"  \
--foreman-proxy-dns-tsig-
principal="foremanproxy/satellite.example.com@EXAMPLE.COM" \
--foreman-proxy-dns-tsig-keytab=/etc/foreman-proxy/dns.keytab
```

For more information,see Configuring DNS, DHCP, and TFTP on Capsule Server .

After you run the **satellite-installer** command to make any changes to your Capsule configuration, you must update the configuration of each affected Capsule in the Satellite web UI.

Updating the Configuration in the Satellite web UI

1. Navigate to **Infrastructure** > **Capsules**.
2. For each Capsule that you want to update, from the **Actions** list, select **Refresh**.
3. Configure the domain:
   a. Navigate to **Infrastructure** > **Domains** and click the domain name that you want to configure.
   b. In the **Domain** tab, set **DNS Capsule** to the Capsule where the subnet is connected.
4. Configure the subnet:
   a. Navigate to **Infrastructure** > **Subnets** and select the subnet name.
   b. In the **Subnet** tab, set **IPAM** to **DHCP** or **Internal DB**.
   c. In the **Domains** tab, select the domain that you want to manage using Satellite or Capsule.
   d. In the **Capsules** tab, set **Reverse DNS Capsule** to the Capsule where the subnet is connected.
   e. Click **Submit** to save the changes.

付録A APPLYING CUSTOM CONFIGURATION TO RED HAT SATELLITE

When you install and configure Satellite for the first time using **satellite-installer**, you can specify that the DNS and DHCP configuration files are not to be managed by Puppet using the installer flags **--foreman-proxy-dns-managed=false** and **--foreman-proxy-dhcp-managed=false**. If these flags are not specified during the initial installer run, rerunning of the installer overwrites all manual changes, for example, rerun for upgrade purposes. If changes are overwritten, you must run the restore procedure to restore the manual changes. For more information, see 付録B *Restoring Manual Changes Overwritten by a Puppet Run*.

To view all installer flags available for custom configuration, run **satellite-installer --scenario satellite --full-help**. Some Puppet classes are not exposed to the Satellite installer. To manage them manually and prevent the installer from overwriting their values, specify the configuration values by adding entries to configuration file **/etc/foreman-installer/custom-hiera.yaml**. This configuration file is in YAML format, consisting of one entry per line in the format of **<puppet class>::<parameter name>: <value>**. Configuration values specified in this file persist across installer reruns.

Common examples include:

- For Apache, to set the ServerTokens directive to only return the Product name:

```
apache::server_tokens: Prod
```

- To turn off the Apache server signature entirely:

```
apache::server_signature: Off
```

- For Pulp, to configure the number of pulp workers:

```
pulp::num_workers: 8
```

The Puppet modules for the Satellite installer are stored under **/usr/share/foreman-installer/modules**. Check the **.pp** files (for example: **moduleName**/manifests/**example**.pp) to look up the classes, parameters, and values. Alternatively, use the **grep** command to do keyword searches.

Setting some values may have unintended consequences that affect the performance or functionality of Red Hat Satellite. Consider the impact of the changes before you apply them, and test the changes in a non-production environment first. If you do not have a non-production Satellite environment, run the Satellite installer with the **--noop** and **--verbose** options. If your changes cause problems, remove the offending lines from **custom-hiera.yaml** and rerun the Satellite installer. If you have any specific questions about whether a particular value is safe to alter, contact Red Hat support.

付録B RESTORING MANUAL CHANGES OVERWRITTEN BY A PUPPET RUN

If your manual configuration has been overwritten by a Puppet run, you can restore the files to the previous state. The following example shows you how to restore a DHCP configuration file overwritten by a Puppet run.

Procedure

1. Copy the file you intend to restore. This allows you to compare the files to check for any mandatory changes required by the upgrade. This is not common for DNS or DHCP services.

```
# cp /etc/dhcp/dhcpd.conf /etc/dhcp/dhcpd.backup
```

2. Check the log files to note down the md5sum of the overwritten file. For example:

```
# journalctl -xe
...
/Stage[main]/Dhcp/File[/etc/dhcp/dhcpd.conf]: Filebucketed /etc/dhcp/dhcpd.conf to puppet
with sum 622d9820b8e764ab124367c68f5fa3a1
...
```

3. Restore the overwritten file:

```
# puppet filebucket restore --local --bucket \
/var/lib/puppet/clientbucket /etc/dhcp/dhcpd.conf \ 622d9820b8e764ab124367c68f5fa3a1
```

4. Compare the backup file and the restored file, and edit the restored file to include any mandatory changes required by the upgrade.

付録C REVERTING SATELLITE TO DOWNLOAD CONTENT FROM RED HAT CDN

If your environment changes from disconnected to connected, you can reconfigure a disconnected Satellite to download content directly from the Red Hat CDN.

Procedure

1. In the Satellite web UI, navigate to **Content** > **Subscriptions**.
2. Click **Manage Manifest**.
3. Edit the **Red Hat CDN URL**field to point to the Red Hat CDN URL: **https://cdn.redhat.com**
4. Click **Save**.

Satellite Server is now configured to download content from the CDN the next time that it synchronizes repositories.