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Red Hat Satellite 5.6

Installation Guide

Configuring, registering, and updating Red Hat Satellite Server

Edition 1

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Abstract

This guide provides requirements and instructions for installation and initial configuration of Red Hat Satellite.

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PREFACE

Red Hat Network (https://access.redhat.com/home) provides system-level support and management of Red Hat systems and networks. It brings together the tools, services, and information repositories needed to maximize the reliability, security, and performance of Red Hat systems. To use Red Hat Network, system administrators register software and hardware profiles, known as *System Profiles,* of their client systems with Red Hat Network. When a client system requests package updates, only the applicable packages for the client are returned.

Red Hat Satellite allows organizations to use the benefits of Red Hat Network without having to provide public Internet access to their servers or other client systems. System profiles are stored locally on the Satellite server. The Satellite website is served from a local web server and is only accessible to systems that can reach the Satellite server. All package management tasks, including errata updates, are performed through the Satellite server.

Red Hat Satellite provides a solution for organizations that require absolute control over and privacy of the maintenance and package deployment of their servers. It allows Red Hat Network customers the greatest flexibility and power in keeping systems secure and updated. Modules can be added to the Satellite server to provide extra functionality.

1. ABOUT THIS GUIDE

This guide explains how to install Red Hat Satellite, including initial installation, configuration, entitlements management and package synchronization.

2. AUDIENCE

The target audience for this guide includes **system administrators** who aim to manage updates for systems within an internal network.

CHAPTER 1. INTRODUCTION

This guide provides instructions for a full installation of a Red Hat Satellite server. This includes installation, configuration, connection to Red Hat Network, subscription management and content synchronization.

1.1. ABOUT RED HAT SATELLITE

Red Hat Network is the environment for system-level support and management of Red Hat systems and networks of systems. Red Hat Network brings together tools, services, and information repositories needed to maximize the reliability, security, and performance of their systems. System administrators use Red Hat Network to register software and hardware profiles for their client systems. These hardware and software profiles are called *system profiles*. When a client system requests package updates, Red Hat Network returns only the applicable packages for the client based upon the profile stored on the Red Hat Network Servers.

Red Hat Satellite provides organizations with the benefits of Red Hat Network without the need for public Internet access for servers or client systems. In addition, users of Red Hat Satellite can:

- Maintain complete control and privacy over package management and server maintenance within their own networks;

- Store System Profiles on a Satellite server, which connects to the Red Hat Network website via a local web server; and,

- Perform package management tasks, including errata updates, through the local area network.

This gives Red Hat customers the greatest flexibility and power to keep servers secure and up-to-date.

Three types of Red Hat Satellite are available:

- *Embedded Database* - One with an embedded database installed on the same machine as the Red Hat Satellite.

- *Managed Database* - One with a database on a separate machine managed with Red Hat Satellite tools.

- *External Database* - One with a customer-provided database on a separate machine.

This guide describes the installation of all types of Red Hat Satellite.

Although the types of Red Hat Satellite are functionally similar, some differences do exist. These variations are primarily limited to hardware requirements, installation steps, maintenance activities, and some troubleshooting steps. This guide identifies distinctions between the Red Hat Satellite types by marking the differing instructions as either *Embedded Database*, *Managed Database*, or *External Database*.

In addition, Red Hat Satellite provides features to integrate an *Enhanced Entitlement Reporting* system with Subscription Asset Manager 1.3 and later. This guide also specifies requirements to integrate with an *Enhanced Entitlement Reporting* system.

1.2. SYSTEM OVERVIEW

Red Hat Satellite consists of the following components:

Database

Red Hat Satellite uses the following database types:

- *Embedded Database* - The database comes bundled with Red Hat Satellite and is installed on the same machine as the Satellite during the installation process. The included database is PostgreSQL.

- *Managed Database* - The database comes bundled with Red Hat Satellite and is installed on a separate machine during the installation process. The included database is PostgreSQL.

- *External Database* - An organization's existing database or, preferably, a database contained on a separate machine. Red Hat Satellite supports PostgreSQL, Oracle Database 11g (Standard or Enterprise Edition), or Oracle Database 10g Release 2 (Standard or Enterprise Edition) for this database installation type.

Red Hat Satellite Core

The core system and entry point for **Red Hat Update Agent** running on client systems. Red Hat Satellite also includes an Apache HTTP Server, which serves XML-RPC requests.

Red Hat Satellite Web Interface

A user interface for advanced system, system group, user, and channel management. The organization configures access to the Red Hat Satellite web interface from the local area network and, optionally, the Internet too. Red Hat Satellite provides an interface similar to the Red Hat Network website and allows full control over client systems, system groups, and users.

RPM Repository

Package repository for Red Hat RPM packages and custom RPM packages identified by the organization.

Management Tools

The Red Hat Satellite Management Tools synchronize the database and package repository with Red Hat Network. Red Hat Satellite also includes management tools for:

- Database and file system synchronization

- Custom RPM and repository imports

- Channel maintenance (Web-based)

- Errata management (Web-based)

- User management (Web-based)

- Client system and system grouping (Web-based)

Red Hat Update Agent

Configure **Red Hat Update Agent** on client systems to retrieve updates from the organization's internal Red Hat Satellite instead of the central Red Hat Network Servers. After a one-time configuration, client systems retrieve updates locally using the **Red Hat Update Agent**. System administrators also schedule actions through the Red Hat Satellite Web Interface.

When a client requests updates, the organization's internal Red Hat Satellite queries its database, authenticates the client system, identifies the updated packages available for the client system, and sends the requested RPMs back to the client system. The client also installs packages if set in

preferences. If the packages are installed, the client system sends an updated package profile to the database on the Red Hat Satellite. Red Hat Satellite then removes these packages from the list of outdated packages for the client.

> **IMPORTANT**
>
> Red Hat strongly recommends that clients connected to Red Hat Satellite be running the latest update of Red Hat Enterprise Linux to ensure proper connectivity.

Red Hat Satellite Proxy Server

Red Hat Satellite can be used in conjunction with the Red Hat Satellite Proxy Server to deliver a distributed, self-contained Red Hat Network environment for the organization. For example, an organization can maintain one Red Hat Satellite in a secure location and Red Hat systems connect to it via local network access. Other remote offices maintain Satellite Proxy Server installations that connect to the Red Hat Satellite. The different locations inside the organization require a networked connection, but this can be a private network; an Internet connection is not required for any of the systems. See the *Red Hat Satellite Proxy Installation Guide* for more information.
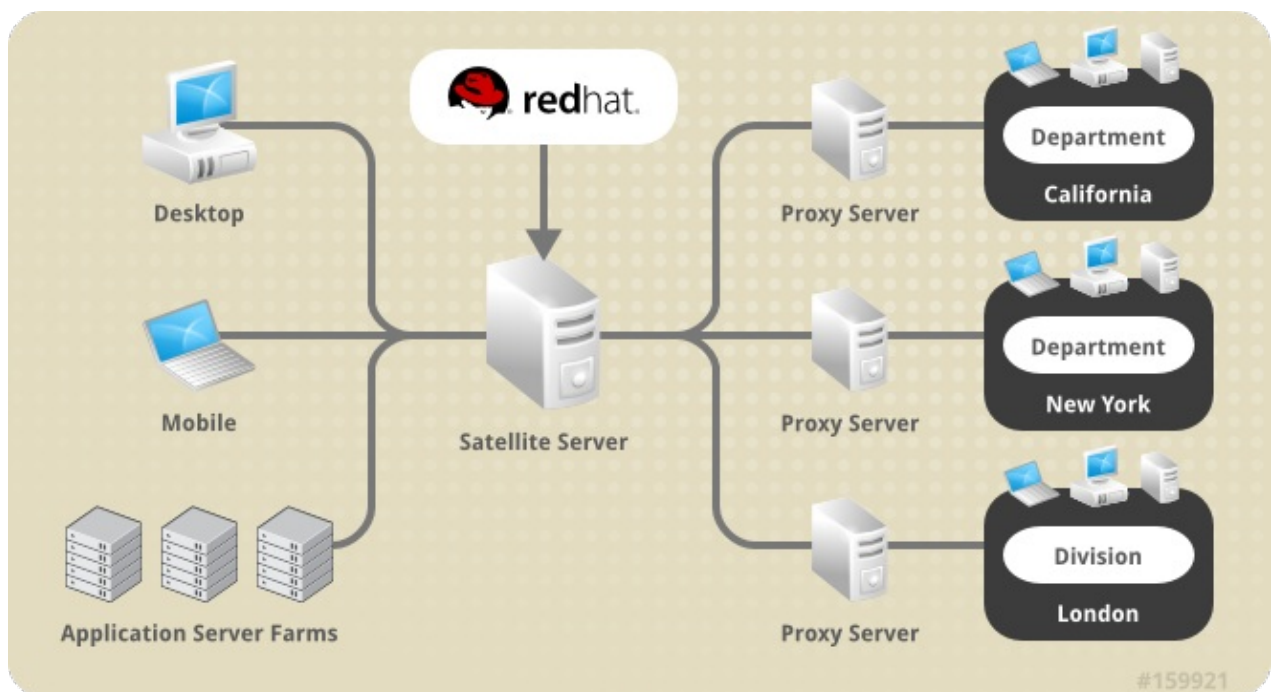
Figure 1.1. Using Red Hat Satellite and Red Hat Satellite Proxy Server Together

Enhanced Entitlements Reporting

Red Hat Satellite 5 uses channels and system entitlement consumption to manage Red Hat content. Newer entitlement tools that integrate with the Red Hat Customer Portal, such as Red Hat Subscription Asset Manager, use certificate-based entitlements. The rules for these two types of entitlement methods differ.

Red Hat Satellite 5.6 and later provides an *Enhanced Entitlements Reporting* technology that integrates with certificate-based entitlement tools. This provides an overview of entitlement consumption from Satellite 5's system management while using newer certificate-based entitlement rules. This allows administrators to:

- Track entitlement consumption at a detailed level.

- Measure consumption based on socket count, host/guest relationships and channel usage

- Capture historical consumption data to enable system administrators to view which entitlements were consumed at a particular time as well as the status of entitlements at specific points in time.

> **IMPORTANT**
>
> The Enhanced Entitlements Reporting functionality only provides reports on content consumption. It does not manage content consumption.

> **IMPORTANT**
>
> Enhanced Entitlements Reporting is only available for Red Hat Satellite 5.6 and later.

1.3. TERMS TO UNDERSTAND

Before using Red Hat Satellite, familiarize yourself with the following terms:

Channel

A Channel is a list of software packages. There are two types of channels: base channels and child channels. A *base channel* consists of a list of packages based on a specific architecture and Red Hat release. A *child channel* is a channel associated with a base channel that contains extra packages.

Organization Administrator

An Organization Administrator is a user role with the highest level of control over an organization's Red Hat Network account. Members of this role can add other users, systems, and system groups to the organization as well as remove them. A Red Hat Network organization must have at least one Organization Administrator.

Channel Administrator

A Channel Administrator is a user role with full access to channel management capabilities. Users with this role are capable of creating channels, assigning packages to channels, cloning channels, and deleting channels. This role can be assigned by an Organization Administrator through the `Users` tab of the Red Hat Network website.

Certificate Authority

A Certificate Authority distributes digital signatures to users as part of public key infrastructure for encrypted authentication and communication.

Red Hat Update Agent

The **Red Hat Update Agent** is the client application that allows users to retrieve and install new or updated packages for its host.

Traceback

A Traceback is a detailed error message for troubleshooting the Red Hat Satellite. Red Hat Satellite generates Tracebacks automatically when a critical error occurs and mails the individual(s) designated in the Red Hat Satellite configuration file.

1.4. SUMMARY OF STEPS

A functional Red Hat Satellite requires more than installing software and a database. Client systems require configuration to use the Red Hat Satellite. Creation of custom channels for custom packages is also recommended. Since these tasks extend beyond the basic installation, they are covered in greater detail in other guides of the *Red Hat Satellite* documentation suite.

This section provides a list of all required and recommended steps, from evaluation through custom package deployment. They should take place in the following order:

1. **Obtaining Red Hat Satellite**

   a. After an evaluation, contact your Red Hat sales representative to purchase Red Hat Satellite.

   b. Receive a Red Hat Network Entitlement Certificate and login information for Red Hat Network from your sales representative.

   c. Log into the Red Hat Customer Portal website (access.redhat.com) and download the distribution ISOs for Red Hat Enterprise Linux and Red Hat Satellite. These can be found on the **Download Software** page under **Downloads → Red Hat Enterprise Linux → Downloads**.

   d. While still logged into the Customer Portal, download the Channel Content ISOs to be served by your Red hat Satellite. These are also available through the **Download Software** page under **Downloads → Red Hat Enterprise Linux → Downloads**. These Channel Content ISOs differ from the distribution ISOs previously mentioned in that they contain metadata necessary for parsing and serving packages by Red Hat Satellite.

2. **Preparing Red Hat Satellite**

   a. Check your software requirements. See Section 2.1, "Software Requirements".

   b. If installing Red Hat Satellite with an *Embedded Database*:

      ■ Check that your hardware fits the requirements in Section 2.2, "Red Hat Satellite Server Requirements".

   c. If installing Red Hat Satellite with a *Managed Database*:

      ■ Check that your hardware fits the requirements in Section 2.2, "Red Hat Satellite Server Requirements".

      ■ Prepare your database instance using the formula provided in Section 2.3.1, "Database Sizing Requirements".

      ■ Setup the *Managed Database* before the Red Hat Satellite installation using the instructions in Section 2.3.2, "Managed Database Requirements" .

   d. If installing Red Hat Satellite with an *External Database*:

      ■ Check that your hardware fits the requirements in Section 2.2, "Red Hat Satellite Server Requirements".

      ■ Prepare your database instance using the formula provided in Section 2.3.1, "Database Sizing Requirements".

      ■ See Section 2.3.3, "External Database Requirements" for other *External Database* considerations.

3. **Installing Red Hat Satellite**

   a. Install Red Hat Enterprise Linux on the host.

   b. Check any pre-installation steps before installing Red Hat Satellite.

   c. Mount the Red Hat Satellite installation media to the host and run the Red Hat Satellite Installation Script.

   d. Follow the prompts as outlined in the installation instructions.

   e. Open Red Hat Satellite's web interface in a web browser and create the first user account. This is the Administrator account (also referred to as the Organization Administrator).

   f. Finalize Red Hat Satellite with any post-installation steps.

4. **Initial Use**

   a. Use the **Red Hat Satellite Synchronization Tool** to import the channels and associated packages into the Red Hat Satellite.

   b. Register a representative machine for each distribution type or channel (such as Red Hat Enterprise Linux 5 or 6) to the Red Hat Satellite.

   c. Copy (using `scp`) `rhn_register` configuration files from the `/etc/sysconfig/rhn/` directory of each machine individually to the `/pub/` directory on the Red Hat Satellite. The `rhn-org-trusted-ssl-cert-*.noarch.rpm` will already be there.

   d. Download and install from the Red Hat Satellite the configuration files and `rhn-org-trusted-ssl-cert-*.noarch.rpm` on the remaining client systems of the same distribution type. Repeat this and the previous step until all distribution types are complete.

   e. Through the Red Hat Satellite's web interface, create an Activation Key for each distribution aligned to the appropriate base channel. At this point, system groups and child channels may also be predefined.

   f. Run the Activation Key from the command line (`rhnreg_ks`) of each client system. Note that this step can be scripted to batch register and reconfigure all remaining client systems in a distribution.

   g. Record all relevant usernames, passwords and other login information and store in multiple secure places.

   h. Now that the Red Hat Satellite is populated with standard Red Hat channels and packages and all clients are connected to it, begin creating and serving custom channels and packages. Import these custom RPMs into the Red Hat Satellite using **Red Hat Network Push** and add custom channels in which to store them through the Red Hat Satellite web interface. See the *Red Hat Satellite Channel Management Guide* for details.

CHAPTER 2. REQUIREMENTS

This chapter contains all the requirements for a Red Hat Satellite installation. This includes variations for all database installation types.

2.1. SOFTWARE REQUIREMENTS

To perform an installation, the following software components must be available:

Base operating system

Red Hat Satellite 5.6 is supported on Red Hat Enterprise Linux 5 or 6. Install the operating system from disc, local ISO image, kickstart, or any other methods that Red Hat supports. Red Hat Enterprise Linux installations require the **@Base** package group with no other package-set modifications, and without third-party configurations or software that is not directly necessary for the direct operation of the server. This restriction includes hardening or other non-Red Hat security software. If such software is required in your infrastructure, *first* install and verify a complete working Red Hat Satellite first, then create a backup of the system before adding any non-Red Hat software.

Before installing a new Red Hat Satellite, make sure to install the latest supported update to Red Hat Enterprise Linux.

Red Hat Satellite 5.6 also supports installation on Red Hat Enterprise Linux in any virtualized environment supported by Red Hat, including Xen, KVM, and VMware. Functional support for virtualized environments does not always equal the same performance of running on physical hardware. Make sure to consider your virtual environment's performance and implement any recommended tuning guidelines.

When installing Red Hat Enterprise Linux 5 or 6 from CD or ISO image, there is no need to select any package groups; Red Hat Satellite only requires the base operating system installation. When installing the operating system via kickstart, select the **@Base** package group.

> **IMPORTANT**
>
> Each purchased Satellite product includes one supported instance of Red Hat Enterprise Linux Server. Install Satellite on a fresh installation of Enterprise Linux where Satellite is the only application and service provided by the OS. Using the Red Hat Enterprise Linux OS included with Satellite to run other daemons, applications, or services within your environment is not supported.

Red Hat Satellite installation media

Red Hat provides the installation media as a disc or ISO. It contains the **Red Hat Satellite Installation Script** and all packages required in order to support Red Hat Satellite are installed automatically.

IMPORTANT

Additional packages beyond @`Base` are required to install Red Hat Satellite. The Red Hat Satellite installer will prompt you to either install the listed packages or ask if you want it to download the files. If your system is not registered to Red Hat Network, use the Red Hat Enterprise Linux installation media available during the Red Hat Satellite installation process to install these additional packages as needed.

The files necessary for Red Hat Satellite installation are listed in the `rhelrpms` file located in the `updates` directory on the installation ISO image.

Ensure to subscribe the Red Hat Satellite host system to the Red Hat Enterprise Linux **Optional** channel to resolve package dependencies during installation.

Channel content

All software packages and data exported for all entitled Red Hat channels. This content is loaded directly on the Red Hat Satellite after installation using the **Red Hat Satellite Synchronization Tool**.

2.2. RED HAT SATELLITE SERVER REQUIREMENTS

This section specifies a Red Hat Satellite server's hardware considerations and requirements for installation.

Depending on the desired use case, a Red Hat Satellite environment might require multiple machines:

- Red Hat Satellite with *Embedded Database* - 1 machine

- Red Hat Satellite with *Embedded Database* and *Enhanced Reporting* - 2 machines

- Red Hat Satellite with *Managed/External Database* - 2 machines

- Red Hat Satellite with *Managed/External Database* and *Enhanced Reporting* - 3 machines

2.2.1. x86_64 Hardware Requirements

The following list shows the required and recommended hardware configurations on the x86_64 platform for a Red Hat Satellite server:

CPU

- *Required:* Intel dual-core processor, 2.4GHz, 512K cache or equivalent

- *Recommended:* Intel quad-core processor, 2.4GHz dual processor, 512K cache or equivalent

Memory

- *Required:* 4 GB of memory

- *Recommended:* 8 GB of memory

Storage

- 5 GB storage for base installation

- A minimum of 40 GB storage per software channel (including **Base** and child channels), in `/var/satellite/`, configurable at install

- A minimum of 10 GB storage for cache files stored within `/var/cache/rhn`. See Section 2.4.4, "Caching" for more information.

- *Strongly Recommended:* A SCSI drive connected to a level 5 RAID

Database

- See Section 2.3.1, "Database Sizing Requirements" for standard database requirements.

- *Embedded Database:* A minimum of 12 GB storage for the database repository in the `/var/lib/pgsql/` partition.

- *Managed Database:* See Section 2.3.2, "Managed Database Requirements".

- *External Database:* See Section 2.3.3, "External Database Requirements".

IMPORTANT

Red Hat Satellite 5.6 now stores *Embedded Database* files within `/var/lib/pgsql/` instead of `/rhnsat/`. Take in consideration this change of disk location for *Embedded Database* files for previous Satellite deployments. Ensure to allocate sufficient disk space for the `/var/lib/pgsql/` directory.

Backup

- A separate partition (or better, a separate set of physical disks) for storing backups, which can be any directory specifiable at backup time

- An external SAN for more reliable backups

2.2.2. s/390x Hardware Requirements

The following list shows the required and recommended hardware configurations on the s/390x mainframe platform for a Red Hat Satellite server:

CPU

- *Required:* 1 IFL, either in LPAR configuration or shared through z/VM

- *Recommended:* 2 or more IFLs on z9 or earlier, 1 or more IFL on z10

Memory

- *Required:* 4 GB of memory

- *Recommended:* 8 GB of memory

Storage

- *Required:*

  - 1 GB swap on ECKD DASD

  - 1xMod3 ECKD DASD or ≥ 2 GB FCP SCSI LUN for base installation

  - A minimum of 40 GB storage per software channel (including **Base** and child channels), in `/var/satellite/`, configurable at install

  - A minimum of 10 GB storage for cache files stored within `/var/cache/rhn`. See Section 2.4.4, "Caching" for more information.

- *Recommended:*

  - 512 MB swap on VDISK + 1 GB swap on ECKD DASD

  - 1xMod9 ECKD DASD or ≥ 2 GB multipathed FCP SCSI LUN for base installation

  - A minimum of 40 GB storage per software channel (including **Base** and child channels), in `/var/satellite/`, configurable at install

  - A minimum of 10 GB storage for cache files stored within `/var/cache/rhn`. See Section 2.4.4, "Caching" for more information.

Database

- See Section 2.3.1, "Database Sizing Requirements" for standard database requirements.

- *Embedded Database:* A minimum of 12 GB storage for the database repository in the `/var/lib/pgsql/` partition.

- *Managed Database:* See Section 2.3.2, "Managed Database Requirements" .

- *External Database:* See Section 2.3.3, "External Database Requirements" .

> **IMPORTANT**
>
> Red Hat Satellite 5.6 now stores *Embedded Database* files within `/var/lib/pgsql/` instead of `/rhnsat/`. Take in consideration this change of disk location for *Embedded Database* files for previous Satellite deployments. Ensure to allocate sufficient disk space for the `/var/lib/pgsql/` directory.

Other

- z/VM 5.3 or later for kickstart and provisioning of guests.

- VSWITCH or Hipersocket LAN for high speed connections to guests

2.3. DATABASE REQUIREMENTS

Red Hat Satellite provides options for *External Database* and *Managed Database*. The following section provides additional hardware requirements for your external database.

2.3.1. Database Sizing Requirements

A single 12 GB tablespace is recommended for most installations, although many customers will find it possible to function with a smaller tablespace. Use the following formula to determine the required size of your database:

- 250 KiB per client system

- 500 KiB per channel, plus 230 KiB per package in the channel (so a channel with 5000 packages would require 1.1 Gib)

For example, a Red Hat Satellite containing four channels and serving 10,000 systems would require 2.5 GiB for its clients and 11 GiB for its channels. If establishing custom channels for testing and staging of packages, include them in this formula.

Keep in mind that the database storage needs may grow rapidly, depending upon the variance of the following factors:

- The number of public Red Hat packages imported (typical: 5000)

- The number of private packages to be managed (typical: 500)

- The number of systems to be managed (typical: 1000)

- The number of packages installed on the average system (typical: 500)

Be generous in database sizing estimates but also consider that size affects the time to conduct backups and adds load to other system resources. If the database is shared, hardware and spacing are entirely dependent on what else is using it.

Ensure block sizes are a minimum of 8 KB for Red Hat Satellite to install properly.

Ensure also the partition containing `/var/lib/pgsql/data` contains an amount of free space equal to the tablespace size. This free space is used for the `db-control restore` command. For example, ensure 12 GB of free space exists for a 12 GB tablespace.

2.3.2. Managed Database Requirements

This section outlines additional steps for administrators installing Red Hat Satellite using a *Managed Database*. The *Managed Database* component installs essential packages containing the database server and Red Hat Satellite tools to a machine separate from the Red Hat Satellite server.
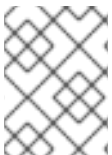
> **NOTE**
>
> The same media used for a Red Hat Satellite installation is also used for the *Managed Database* installation.

Procedure 2.1. Installing the Managed Database

1. Register to Red Hat Subscription Management. Run the following command to register your system, entering your Customer Portal user name and password when prompted:

   ```
   # subscription-manager register
   ```

   The command displays output similar to the following:

   ```
   Registering to: subscription.rhsm.redhat.com:443/subscription
   ```

```
Username: user_name
Password: password
The system has been registered with ID: aa2e5c34-b8d0-4388-b912-
6be761c632b1
```

2. Identify and attach the Red Hat Enterprise Linux and Red Hat Satellite subscriptions.

   List all available subscriptions.

   ```
   # subscription-manager list --all --available
   ```

   Attach the subscriptions. If there are multiple subscriptions to be attached, repeat the **--pool=pool_id** parameter.

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

3. Enable the Red Hat Enterprise Linux repository appropriate to your operating system version.

   For Red Hat Enterprise Linux 6

   ```
   # subscription-manager repos --enable rhel-6-server-rpms
   ```

   For Red Hat Enterprise Linux 5

   ```
   # subscription-manager repos --enable rhel-5-server-rpms
   ```

4. Mount the Red Hat Satellite installation media.

   Mount as a CD:

   ```
   # mkdir /media/cdrom
   # mount /dev/cdrom /media/cdrom
   ```

   Mount as an ISO:

   ```
   # mkdir /media/cdrom
   # mount -o loop iso_filename /media/cdrom
   ```

5. Change to the mounted directory.

   ```
   # cd /media/cdrom
   ```

6. Run the **install.pl** script with the **--managed-db** and **--disconnected** options.

   ```
   # ./install.pl --managed-db --disconnected
   ```

   > **NOTE**
   >
   > The **--disconnected** option is required to prevent the installer attempting to connect to Red Hat Network.

7. The `install.pl` script asks for the following information.

   - Database name

   - Database user

   - Database password

   - A comma-separated list of local addresses to listen. Leave blank for all addresses.

   - A comma-separated list of remote addresses of Satellite servers, in address/netmask format. The *Managed Database* allows connections from these addresses.

   ```
   Database name: mydb
   Database user: mydbuser
   Database password:  mydbpassword
   Local addresses to listen on (comma-separated, RETURN for all):
   127.0.0.1
   Remote addresses to allow connection from (address/netmask format,
   comma-separated): 192.168.1.10/32
   Initializing database:                                    [  OK
   ]
   Starting postgresql service:                              [  OK
   ]
   ```

   The script installs the necessary packages for your *Managed Database*. This includes a set of management tools for database.

   The script also prepares the database for your Red Hat Satellite installation.

8. Enable the Managed DB repository according to the Red Hat Enterprise Linux version, and hardware platform.

   For Red Hat Enterprise Linux 6 and AMD64 and Intel 64

   ```
   # subscription-manager repos --enable=rhel-6-server-satellite-
   manageddb-5.6-rpms
   ```

   For Red Hat Enterprise Linux 6 and IBM System z

   ```
   # subscription-manager repos --enable=rhel-6-system-z-satellite-
   manageddb-5.6-rpms
   ```

   For Red Hat Enterprise Linux 5 and AMD64 and Intel 64

   ```
   # subscription-manager repos --enable=rhel-5-server-satellite-
   manageddb-5.6-rpms
   ```

   Red Hat Enterprise Linux 5 and IBM System z

   ```
   # subscription-manager repos --enable=rhel-5-system-z-satellite-
   manageddb-5.6-rpms
   ```

9. When the script completes, install your Red Hat Satellite using the instructions from Chapter 4, *Installation*.

2.3.3. External Database Requirements

The *External Database* version of Red Hat Satellite requires additional hardware considerations. This section specifies these requirements when installing the Red Hat Satellite server and connecting to an external database.

Red Hat supports Red Hat Satellite installations on a *External Database* using one of the following:

- PostgreSQL 8.4 or greater

- Oracle Database 11g Standard and Enterprise Edition

- Oracle Database 10g Release 2 Standard and Enterprise Edition

Ensure the *External Database* runs on a different server to the Red Hat Satellite.

> **IMPORTANT**
>
> The following database migrations are not supported:
>
> - PostgreSQL Databases to Oracle Databases
>
> - PostgreSQL *Embedded Database* to PostgreSQL *External Database*
>
> - PostgreSQL *External Database* to PostgreSQL *Embedded Database*

2.3.3.1. PostgreSQL Database Requirements

If running a PostgreSQL *External Database*, install the `postgresql-pltcl` package to your system. This package contains the PL/Tcl procedural language for PostgreSQL, which Satellite's audit logging features require. To install this package, log in to your *External Database* server and run the following command:

```
# yum install postgresql-pltcl
```

> **NOTE**
>
> If running a PostgreSQL *External Database* on Red Hat Enterprise Linux 5, use the `postgresql84-pltcl` package.

PostgreSQL requires some tuning to provide the optimal performance of your Red Hat Satellite server. For manual tuning of your `/var/lib/pgsql/data/postgresql.conf`, set the following parameters:

```
#shared_buffers = 24MB
maintenance_work_mem = 224MB
checkpoint_completion_target = 0.7
effective_cache_size = 2560MB
work_mem = 6MB
wal_buffers = 4MB
checkpoint_segments = 8
```

```
shared_buffers = 896MB
max_connections = 600
listen_addresses = '*'
bytea_output = 'escape'
```

> **NOTE**
>
> The `bytea_output` parameter sets the correct encoding for bytea datatypes. Without this parameter, Satellite's Taskomatic service fails.

Restart the PostgreSQL server for these changes to take effect:

```
# service postgresql92-postgresql restart
```

2.3.3.2. Oracle Database Requirements

The Oracle database should have a user assigned to Red Hat Satellite with full DDL and DML access to that user's default tablespace. The user needs standard connection information for the database at the time of installation.

The precise access levels required by the Oracle user are as follows:

- ALTER SESSION
- CREATE SEQUENCE
- CREATE SYNONYM
- CREATE TABLE
- CREATE VIEW
- CREATE PROCEDURE
- CREATE TRIGGER
- CREATE TYPE
- CREATE SESSION

Additional database requirements include:

- Security Identifier (SID)
- Listener Port
- Username
- UTF-8 character set

Two additional *suggested* recommendation for user's default tablespace include:

- Uniform Extent Size
- Auto Segment Space Management

IMPORTANT

Ensure that the NLS/charset setting is set to 'UTF8' when using an external database, not 'AL32UTF8' or other charsets. Using other charsets may lead to problems later.

The disk layout on the database machine is independent of Red Hat Satellite and entirely up to the customer.

IMPORTANT

Red Hat supports Red Hat Satellite's interactions with an external, third-party (such as Oracle) database as long as the external, third-party database is configured per Red Hat's documentation. Red Hat supports any Red Hat Satellite version-specific schema, package, tool or instruction set provided by Red Hat and designed to be used with a third-party database.

Red Hat does not support general setup, maintenance or troubleshooting of a third-party database outside of express interaction with Red Hat Satellite.

2.4. ADDITIONAL REQUIREMENTS

Red Hat Satellite has some additional considerations before installation. These additional requirements must be met before starting the Satellite installation.

2.4.1. Firewall

Protect your Red Hat Satellite environment with a firewall by blocking all unnecessary and unused ports.

Client systems connect to Red Hat Satellite over ports 80, 443, and 4545 (if Monitoring is enabled). In addition, enabling push actions from Red Hat Satellite to client systems, as described in Section 8.7, "Enabling Push to Clients", requires inbound connections on port 5222. Finally, if the Satellite pushes to a Red Hat Proxy Server, allow inbound connections on port 5269.

The following table provides a list of port requirements for Red Hat Satellite.

Table 2.1. Ports to open on the Red Hat Satellite Server

Port	Protocol	Direction	Reason
67	TCP/UDP	Inbound	Open this port to configure the Red Hat Satellite as a DHCP server for systems requesting IP addresses.
69	TCP/UDP	Inbound	Open this port to configure Red Hat Satellite as a PXE server and allow installation and re-installation of PXE-boot enabled systems.
80	TCP	Outbound	Red Hat Satellite uses this port to reach Red Hat Network.
80	TCP	Inbound	Web UI and client requests come in via http.
443	TCP	Inbound	Web UI and client requests come in via https.

Port	Protocol	Direction	Reason
443	TCP	Outbound	Red Hat Satellite uses this port to reach Red Hat Network (unless running in a disconnected mode for Satellite).
4545	TCP	Inbound and Outbound	Red Hat Satellite Monitoring makes connections to **rhnmd** running on client systems, if Monitoring is enabled and probes are configured for registered systems.
5222	TCP	Inbound	This port pushes actions to client systems.
5269	TCP	Inbound and Outbound	This port pushes actions to Red Hat Proxy Server.
5432	TCP	Inbound and Outbound	This is a requirement for communication with a PostgreSQL database server if using an *External Database* or *Managed Database*.

Finally, open your firewall to the following hosts for access to Red Hat's Content Delivery Network (CDN):

- `rhn.redhat.com`

- `xmlrpc.rhn.redhat.com`

- `satellite.rhn.redhat.com`

- `content-xmlrpc.rhn.redhat.com`

- `content-web.rhn.redhat.com`

- `content-satellite.rhn.redhat.com`

2.4.2. File Permissions

umask is a Linux command that sets a file permissions mask for new files. This helps secure the file permissions for new files created on a system. However, users with a restrictive **umask** value might experience problems with installation and operation of Red Hat Satellite.

The recommended **umask** value is `022`.

2.4.3. SELinux Policy

SELinux is a set of secure software policies that implement mandatory access control to Red Hat Enterprise Linux and other operating systems. Red Hat Satellite supports SELinux `targeted` policy in `enforcing` or `permissive` mode on Red Hat Enterprise Linux 5 and 6.

2.4.4. Caching

Beyond the space needed for the Red Hat Enterprise Linux installation and `/var/satellite/`, Red Hat Satellite requires space to generate cache files. These cache files are constantly regenerated as

they become needed, even if the cache files are deleted. These cache files are stored within `/var/cache/rhn`, and the storage needs of this directory depend on the following factors:

- How many channels you synchronize or import from Red Hat or Channel dumps.

- How many custom packages and channels you have.

- Whether or not you are using Red Hat Satellite Synchronization.

Provide at least 10 GB of space for `/var/cache/rhn/` on a Red Hat Satellite server. For very large environments with numerous channels, packages, and using Inter Satellite Sync, usage can grow to as much as 100 GB of space for cache files in `/var/cache/rhn`.

2.4.5. DMZ Proxy Solution

Unless the Red Hat Satellite server is in disconnected mode, it needs to initiate outbound connections on ports 80 and 443 to the Red Hat Network Hosted service (`rhn.redhat.com`, `xmlrpc.rhn.redhat.com`, and `satellite.rhn.redhat.com`). To ensure correct functioning of the system, do not restrict access to these hosts and ports. If required, use an http or https proxy by issuing the `satellite-sync --http-proxy` command.

The Red Hat Satellite server needs open inbound connections on ports 80 and 443 from client systems and any Red Hat Proxy Servers connected to the Red Hat Satellite, as well as any system that needs to access the web interface. Web interface and client requests come from either http or https.

The Red Hat Satellite Monitoring functions require outbound connections to individual Monitoring-enabled client systems on port 4545. Red Hat Satellite Monitoring makes connections to `rhnmd` running on client systems if Monitoring is enabled and probes are configured for registered systems.

The Red Hat Network push functionality requires both outbound and inbound connections on port 5269 to and from each registered Red Hat Proxy Server with Red Hat Network push functionality enabled. This is used for two-way communications between the `jabberd` service on Red Hat Satellite and Red Hat Proxy Server, respectively. In addition, it needs to allow inbound connections on port 5222 from client systems directly registered to Red Hat Satellite. This is used for one-way (client to server) communications between the `osad` service on client systems and the `jabberd` service on the Red Hat Satellite.

2.4.6. Synchronized System Times

The time settings on the server and clients need to be synchronized so the SSL certificate does not expire before or during use. Red Hat requires the Red Hat Satellite and all client systems to use Network Time Protocol (NTP). This also applies to the separate database machine in Red Hat Satellite with *External Database* or *Managed Database*, which must also be set to the same time zone as the Red Hat Satellite.

2.4.7. Setting System Language and Locale

Set the UTF-8 encoding for your language and locale on your Red Hat Satellite system via the `/etc/sysconfig/i18n` file. The *LANG* setting in the file must be in the following format:

```
LANG="[language_TERRITORY].UTF-8"
```

The `language` and `TERRITORY` are entered as two-letter codes. For example if your language is English and your locale is the United States, you set your *LANG* setting to `en_US.UTF-8`.

2.4.8. Fully Qualified Domain Name

Red Hat Satellite requires the installation to resolve its own fully qualified domain name (FQDN) properly. If this is not the case, cookies will not work properly on the web interface.

Verify that the server can resolve its FQDN. The expected output of this command is the host's FQDN.

```
# hostname -all-fqdns
```

> **IMPORTANT**
>
> It is important that the hostname of a Red Hat Satellite contains no uppercase letters. A hostname that includes uppercase letters can cause `jabberd` to fail.
>
> If, at any point, you change your Red Hat Satellite hostname, see Section 8.3, "Changing the Red Hat Satellite Hostname".

2.4.9. Functioning Domain Name Service (DNS)

Ensure all clients resolve Red Hat Satellite's domain name. All systems, both servers and clients, require connection to a working DNS server in the customer environment.

2.4.10. Red Hat Network Account

Customers aiming to connect with central Red Hat Network servers to receive incremental updates require an external account with Red Hat Network. This account is set up at the time of purchase with the sales representative.

> **WARNING**
>
> Do not subscribe your Red Hat Satellite to any of the following child channels available on Red Hat Network Hosted:
>
> - Red Hat Enterprise Linux - Optional Packages
> - Red Hat Enterprise Linux - Supplementary Packages
> - Red Hat Developer Suite
> - Red Hat Application Server
> - Red Hat Extras
> - JBoss product channels
>
> Subscribing to these channels and updating Red Hat Satellite might install incompatible versions of critical software components, causing Red Hat Satellite to fail. Make sure to subscribe Red Hat Satellite to only the Red Hat Network Tools channel.

2.4.11. Backups of Login Information

It is imperative that customers keep track of all primary login information. For Red Hat Satellite, this includes usernames and passwords for the Organization Administrator account on `access.redhat.com`, the primary administrator account on the Red Hat Satellite itself, SSL certificate generation, and database connection (which also requires an SID, or net service name). Red Hat strongly recommends you copy this information to removable storage media, print out on paper, and store in a fireproof safe.

2.4.12. Channel Content ISOs

An Internet connection is not required for Red Hat Satellites running in completely disconnected environments. This feature instead uses Channel Content ISOs that you can download to a separate system to synchronize Red Hat Satellite with the central Red Hat Network Servers. All other Red Hat Satellites should be synchronized directly over the Internet.

2.4.13. Service Access

No system components should be directly, publicly available. No user, other than the system administrators, should have shell access to these machines.

All unnecessary services should be disabled using **ntsysv** or **chkconfig**.

The following services should be enabled.

- **jabberd**

- **postgresql** (for Embedded Database Installation)

- **tomcat6** (for installation on Red Hat Enterprise Linux 6)

- **httpd**

- **osa-dispatcher**

- **Monitoring**

- **MonitoringScout**

- **rhn-search**

- **cobblerd**

- **taskomatic**

If Red Hat Satellite serves Monitoring-entitled systems and you wish to acknowledge via email the alert notifications you receive, configure **sendmail** or **postfix** to properly handle incoming mail.

2.4.14. Perl Interpreter

The installer requires a Perl interpreter. To test if a Perl interpreter is already installed, run the command `perl --version`. If the output includes the text `command not found`, install a Perl interpreter.

```
# yum install perl
```

CHAPTER 3. ENTITLEMENT CERTIFICATE

Red Hat Satellite requires a copy of your Red Hat Network Entitlement Certificate in order to activate it. This Entitlement Certificate is included with your subscription to Red Hat Satellite and is available from the Red Hat Customer Portal.

Download the Entitlement Certificate from the Red Hat Customer Portal and copy it to the Satellite server's file system in any directory. The installation program asks you for its location.
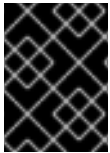
> **IMPORTANT**
>
> Check your Red Hat Network account has been granted the necessary entitlements to conduct the installation.

Procedure 3.1. Creating a New Entitlement Certificate

1. Navigate to access.redhat.com in your web browser.

2. Log in using your Red Hat customer account details.

3. Navigate to **Subscriptions**.

4. Scroll to the `Manage` section and click `Satellite` in the list of `Subscription Management Applications`.

5. Click **Register a Satellite**.

6. Type a **Name** for your Satellite.

7. Select your `Satellite version`.

   > **IMPORTANT**
   >
   > Choose the correct version at this step. Each version of Satellite uses a slightly different format for the certificate.

8. Click `Register`.

9. Click `Attach a subscription`.

   Select the checkbox for the desired subscription. Enter the quantity `1` in the `Quantity` input box. Click `Attach Selected` to add these subscriptions to the entitlement certificate.

10. Click `Download Satellite Certificate` and save the file containing the entitlement certificate.

The chosen subscriptions are assigned to the Satellite distributor entered on the Customer Portal. This results in an entitlement certificate that users can download and use during the Satellite installation process.

CHAPTER 4. INSTALLATION

This chapter describes the initial installation of the Red Hat Satellite. It presumes the prerequisites listed in Chapter 2, *Requirements* have been met. If you are instead upgrading to a newer version of   Red Hat Satellite, see Chapter 7, *Upgrades* or contact your Red Hat representative for assistance.

4.1. PREREQUISITES

The following section outlines the prerequisites for installing Red Hat Satellite.

4.1.1. Base Operating System

Red Hat Satellite runs on a Red Hat Enterprise Linux operating system. The first phase is to install the base operating system, either from disc, ISO image, or kickstart.

Ensure the following prerequisites are met by the Red Hat Enterprise Linux installation.

- Allocate plenty of space to the partitions storing data. The default location for channel packages is **/var/satellite/**. For Red Hat Satellite with *Embedded Database*, remember the database itself is within the **/var/lib/pgsql/** directory.

- Enable Network Time Protocol (NTP) on Red Hat Satellite and, if it exists, the database server then select the appropriate time zone. Make sure all client have the **ntpd** daemon running and set it to the correct time zone.

- It is strongly advised that the **/home/** partition is locally mounted.

- Register to Red Hat Subscription Management. Once installation of the base operating system is complete, run the following command to register your system, entering your Customer Portal user name and password when prompted:

  ```
  # subscription-manager register
  ```

  The command displays output similar to the following:

  ```
  Registering to: subscription.rhsm.redhat.com:443/subscription
  Username: user_name
  Password: password
  The system has been registered with ID: aa2e5c34-b8d0-4388-b912-
  6be761c632b1
  ```

- Identify and attach the Red Hat Enterprise Linux and Red Hat Satellite subscriptions.

  List all available subscriptions.

  ```
  # subscription-manager list --all --available
  ```

  Attach the subscriptions. If there are multiple subscriptions to be attached, repeat the **--pool=pool_id** parameter.

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

- Enable the Red Hat Enterprise Linux repository appropriate to your version and architecture.

For Red Hat Enterprise Linux 6 (on AMD64 or Intel 64)

```
# subscription-manager repos --enable=rhel-6-server-rpms
```

For Red Hat Enterprise Linux 5 (on AMD64 or Intel 64)

```
# subscription-manager repos --enable=rhel-5-server-rpms
```

For Red Hat Enterprise Linux 6 (On System Z architecture)

```
# subscription-manager repos --enable=rhel-6-for-system-z-rpms
```

For Red Hat Enterprise Linux 5 (On System Z architecture)

```
# subscription-manager repos --enable=rhel-5-for-system-z-rpms
```

4.1.2. Mounting the Installation Media

The following section describes the process for mounting either the disc or ISO image containing installation media for Red Hat Satellite.

Procedure 4.1. Mounting from a disc

1. Log into the machine as **root**.

2. Insert the Red Hat Satellite Server CD or DVD containing the installation files.

3. Red Hat Enterprise Linux might automount the disc. If so, it mounts the disc to the **/media/cdrom/** directory. If Red Hat Enterprise Linux does not automount the disc, manually mount it to the **/media/cdrom/** directory with the following commands:

   ```
   # mkdir /media/cdrom
   # mount /dev/cdrom /media/cdrom
   ```

Procedure 4.2. Mounting from an ISO image

1. Log into the machine as **root**.

2. Download the ISO image from the Red Hat Customer Portal.

3. Mount the ISO image to a location on your filesystem:

   ```
   # mkdir /media/cdrom
   # mount -o loop iso_filename /media/cdrom
   ```

The installation media is mounted at **/media/cdrom/**. Use this location to access the Red Hat Satellite Installation Script.

4.1.3. Obtaining an Entitlement Certificate

Red Hat Satellite requires a copy of your Red Hat Network Entitlement Certificate in order to activate it. This Entitlement Certificate is included with your subscription to Red Hat Satellite and is available from the Red Hat Customer Portal. See Chapter 3, *Entitlement Certificate* for more information.

Download the Entitlement Certificate from the Red Hat Customer Portal and copy it to the Satellite server's file system in any directory. The installation program asks you for its location.
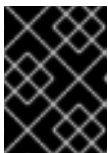
> **IMPORTANT**
>
> Ensure your Red Hat Network account has been granted the necessary entitlements to conduct the installation.

4.2. PRE-INSTALLATION

The following instructions assume the Red Hat Satellite installation media is mounted at `/media/cdrom/`. The installation media contains the `install.pl` Installation Script.

This section outlines considerations to take in account before running the Installation Script.

4.2.1. Options for the Installation Script

The table below outlines the various options available for the `install.pl` Installation Script:

Table 4.1. Installation Options

Option	Usage
`--help`	Prints the help message.
`--answer-file=<filename>`	Indicates the location of an answer file to be use for answering questions asked during the installation process.
`--non-interactive`	For use only with `--answer-file`. If the `--answer-file` does not provide a required response, exit instead of prompting the user.
`--re-register`	Register the system with Red Hat Network, even if it is already registered.
`--external-oracle`	Install Red Hat Satellite with an external Oracle database.
`--external-postgres`	Install Red Hat Satellite with an external PostgreSQL database.
`--managed-db`	Install a PostgreSQL Managed Database.
`--disconnected`	Install Red Hat Satellite in disconnected mode.
`--clear-db`	Clear any pre-existing database schema before installing. This will destroy any data in the database and re-create an empty schema.

Option	Usage
`--skip-system-version-test`	Do not test the Red Hat Enterprise Linux version before installing.
`--skip-selinux-test`	Do not check to make sure SELinux is disabled.
`--skip-fqdn-test`	Do not verify that the system has a valid hostname. Red Hat Satellite requires that the hostname be properly set during installation. Using this option may result in a Satellite server that is not fully functional.
`--skip-db-install`	Do not install the embedded database. This option may be useful if you are reinstalling the satellite, and do not want to clear the database.
`--skip-db-diskspace-check`	Do not check to make sure there is enough free disk space to install the embedded database.
`--skip-db-population`	Do not populate the database schema.
`--skip-gpg-key-import`	Do not import Red Hat's GPG key.
`--skip-ssl-cert-generation`	Do not generate the SSL certificates for the Red Hat Satellite.
`--run-updater`	Do not ask to install needed packages from Red Hat Network, if the system is registered.

4.2.2. Automated Red Hat Satellite Server Installation

The Red Hat Satellite Installation Script provides the option to use an answer file. This file contains pre-determined responses to some, or all, of the questions asked by the Installation Script. The Installation Script uses the answer file to run without user interaction; this is useful in situations where system administrators require an automated installation. For an example of an answers file, view the `answers.txt` file found in the `install/` directory of the CD or ISO.

Follow the steps below to perform an automated install with an answer file.

Procedure 4.3. Installing with an Answers File

1. Copy the example `answers.txt` file to `/tmp/answers.txt`

   ```
   # cp answers.txt /tmp/answers.txt
   ```

2. Edit the file and add your organization's desired options.

3. Once the answer file is ready, use the `--answer-file` option when starting the installation process from the command line:

   ```
   # ./install.pl --answer-file=/tmp/answers.txt --disconnected
   ```

The Red Hat Satellite Installation Script looks for answers in the file. For any option not filled out in the file, the Installation Script prompts the user for the missing information.

> **NOTE**
>
> The `--disconnected` option is required to prevent the installer attempting to connect to Red Hat Network.

4.2.3. Installing Behind a HTTP Proxy: Pre-Configuration

Due to the way that Red Hat Satellite uses the `rhn.conf` file to control its connection settings, there is no way to add options to that file prior to installation of Red Hat Satellite. If your network is behind an HTTP proxy in your organization, you cannot activate the Red Hat Satellite at installation time. A workaround to this issue is to first perform a *disconnected* installation of Red Hat Satellite, then switch the configuration to a connected method after installation is completed. The following demonstrates the initial steps to creating a connected Red Hat Satellite installation behind an HTTP proxy:

Procedure 4.4. Installing Red Hat Satellite behind an HTTP Proxy - Pre-Configuration

1. Complete a minimal installation of Red Hat Enterprise Linux.

2. Configure the system so that it can connect to Red Hat Network behind the HTTP proxy. Edit the file `/etc/sysconfig/rhn/up2date` as follows:

   ```
   enableProxy=1
   enableProxyAuth=1
   httpProxy=<http-proxy-fqdn>
   proxyUser=<proxy-username>
   proxyPassword=<proxy-password>
   ```

3. Register the system to Red Hat Network.

4. Begin the installation of Red Hat Satellite with the disconnected option:

   ```
   ./install.pl --disconnected
   ```

After installation, follow the steps from Section 4.4, "Post-Installation".

4.3. INSTALLATION SCRIPT PROCESS

The following instructions assume the Red Hat Satellite installation media is mounted at `/media/cdrom/`. The installation media contains the `install.pl` Installation Script.

This section guides the user through the installation process using the installer script.

4.3.1. Running the Installer Script

The following procedure starts the installation procedure. Ensure to run this procedure as the `root` user.

> **WARNING**
>
> The Installation Script updates the kernel and all required packages.

Procedure 4.5. Running Installation Script

1. Run the installer script with an option to install with either *Embedded Database*, *Managed Database*, or *External Database*.

   Regardless of which database option is used, the `--disconnected` option is required to prevent the installer attempting to connect to Red Hat Network.

   a. *Embedded Database* - From the **/media/cdrom/** directory, enter the following command to start the Installation Script:

   ```
   # ./install.pl --disconnected
   ```

   b. *Managed Database* - From the **/media/cdrom/** directory, enter the following command to start the Installation Script:

   ```
   # ./install.pl --external-postgresql --disconnected
   ```

   Make sure you have completed the *Managed Database* requirements before running this command. See Section 2.3.2, "Managed Database Requirements" for these requirements.

   c. *External Database* - From the **/media/cdrom/** directory, enter one of the following commands to start the Installation Script:

   For a PostgreSQL *External Database*:

   ```
   # ./install.pl --external-postgresql --disconnected
   ```

   For an Oracle *External Database*:

   ```
   # ./install.pl --external-oracle --disconnected
   ```

2. The script first completes prerequisite checks. These checks determine all prerequisites from Chapter 2, *Requirements* are met before proceeding with the installation.

   ```
   * Starting the Red Hat Satellite installer.
   * Performing pre-install checks.
   * Pre-install checks complete.  Beginning installation.
   * RHN Registration.
   ** Registration: Disconnected mode.  Not registering with RHN.
   ```

   The Satellite registration with Red Hat Network does not apply, because the installer is being run in *disconnected* mode.

3. The installer then continues to install its prerequisite packages. Reply **y** to the prompt **Do you want the installer to resolve dependencies [y/N]?**.

```
* Checking for uninstalled prerequisites.
** Checking if yum is available ...

  There are some packages from Red Hat Enterprise Linux that are not
part
  of the @base group that Satellite will require to be installed on
this
  system. The installer will try resolve the dependencies
automatically.
  However, you may want to install these prerequisites manually.
  Do you want the installer to resolve dependencies [y/N]?y
* Installing RHN packages.
.
.
* Now running spacewalk-setup.
* Setting up Selinux..
```

The next section sets up the database for your installation.

4.3.2. Database Configuration

This step creates and populates the initial database. This step can take quite a while. If you would like to monitor the progress of the installation, use **tail** in a separate window to monitor the **/var/log/rhn/install_db.log** file.

Embedded Database

If you are installing Red Hat Satellite with an *Embedded Database*, this process is automatic.

```
** Database: Setting up database connection for PostgreSQL backend.
** Database: Installing the database:
** Database: This is a long process that is logged in:
** Database:   /var/log/rhn/install_db.log
*** Progress: #
** Database: Installation complete.
** Database: Populating database.
*** Progress: ##################################
```

External or Managed Database

If you are installing Red Hat Satellite with a *Managed Database* or *External Database*, the script prompts for connection details to the database.

```
** Database: Setting up database connection for PostgreSQL backend.
Hostname (leave empty for local)? mydb.example.com
Port [5432]?
Database? db
Username? dbuser
Password? password
** Database: Populating database.
*** Progress: ##################################
```

IMPORTANT

The Installation Script does not allow blank password values. Make sure the chosen database user has a password.

After a completed database installation, the Installation Script continues configuration.

4.3.3. Initial Configuration

The Installation Script performs some basic configuration tasks on your Red Hat Satellite environment.

The Red Hat Satellite Installer downloads and installs the Red Hat GPG key and sets up the `/root/.gnupg/` directory, if required.

```
* Setting up users and groups.
** GPG: Initializing GPG and importing key.
```

At the prompt, enter the email address to which you would like notifications from Red Hat Satellite to be sent. Due to the large volume of emails, choose a general email address rather than the address of an individual.

```
You must enter an email address.
Admin Email Address? admin@example.com
* Performing initial configuration.
```

4.3.4. Entitlement Certificate Configuration

In order to activate Red Hat Satellite, provide the location of your entitlement certificate. For details of how to obtain the entitlement certificate, see Chapter 3, *Entitlement Certificate*.

```
* Activating Red Hat Satellite.
Where is your satellite certificate file? /root/example.cert
** Loading Red Hat Satellite Certificate.
** Verifying certificate locally.
** Activating Red Hat Satellite.
```

4.3.5. CA Certificate Configuration

The next step is to create a CA certificate for SSL access. Reply **y** to the question **Should setup configure apache's default ssl server for you?**, then provide the following information as prompted.

CA cert

Enter a password for the certificate.

Organization

Enter the name of your organization.

Organization Unit

Enter the name of your department within your organization.

Email Address

> Enter an email address to be associated with this certificate, such as the admin email entered in the steps above.

City

> Enter your city.

State

> Enter your state.

Country

> Enter your country. The country code must be exactly two letters, or the certificate generation fails. Type **?** to see a list of country codes.

```
 * Enabling Monitoring.
* Configuring apache SSL virtual host.
Should setup configure apache's default ssl server for you (saves original
ssl.conf) [Y]?
** /etc/httpd/conf.d/ssl.conf has been backed up to ssl.conf-swsave
* Configuring tomcat.
** /etc/sysconfig//tomcat6 has been backed up to tomcat6-swsave
** /etc/tomcat6//server.xml has been backed up to server.xml-swsave
** /etc/tomcat6//web.xml has been backed up to web.xml-swsave
* Configuring jabberd.
* Creating SSL certificates.
CA certificate password?
Re-enter CA certificate password?
Organization? Red Hat
Organization Unit [satellite.example.com]? Sales
Email Address [admin@example.com]?
City? Raleigh
State? NC
Country code (Examples: "US", "JP", "IN", or type "?" to see a list)? US
```

4.3.6. Cobbler Configuration

Provisioning hosts using PXE requires `tftpd` and `xinitd` services enabled and running. If you will be using this feature, reply **y**.

```
* Setting up Cobbler..
cobblerd does not appear to be running/accessible
Cobbler requires tftp and xinetd services be turned on for PXE provisioning
functionality. Enable these services [Y]?
```

4.3.7. Installation Complete

After the Cobbler configuration is complete, the Installation Script performs final configuration and restarts the associated services.

```
* Final configuration.
* Restarting services.
```

```
Installation complete.
Visit https://satellite.example.com to create the satellite administrator
account.
```

The Red Hat Satellite installation is now complete.

4.4. POST-INSTALLATION

The following sections outline configuration considerations after installation.

4.4.1. Enable Satellite 5 Repository

Enable the Satellite 5 repository appropriate to your operating system version.

For Red Hat Enterprise Linux 6

```
# subscription-manager repos --enable rhel-6-server-satellite-5.6-rpms
```

For Red Hat Enterprise Linux 5

```
# subscription-manager repos --enable rhel-5-server-satellite-5.6-rpms
```

4.4.2. Upgrading the Satellite 5 Database Schema

Before proceeding to use Satellite 5, it is important that the Satellite 5 database schema be up to date.

On the Satellite 5 server, list packages for which updates are applicable.

```
# yum check-update
```

If there is an update pending for the `satellite-schema` package, complete the procedure detailed in *How do I upgrade the database schema of a Red Hat Satellite server?*

4.4.3. Update Packages

Update all installed packages.

```
# yum update
```

4.4.4. Switch Satellite to Connected Mode

The installation was completed in disconnected mode, so must be switched to *connected* mode.

Procedure 4.6. Switch to Connected Mode

1. Edit the Red Hat Network configuration file **/etc/rhn/rhn.conf** and make the following changes:

2. a. Edit the *server.satellite.rhn_parent* line as follows.

   ```
   # server.satellite.rhn_parent = satellite.rhn.redhat.com
   ```

b. Change the line *disconnected=1* to *disconnected=0*.

```
disconnected=0
```

3. Validate the configuration changes.

a.
```
# spacewalk-cfg-get get server disconnected
```

The expected output is **0**, confirming that disconnected mode is *not* enabled.

b.
```
# spacewalk-cfg-get get server.satellite rhn_parent
```

The expected output is **satellite.rhn.redhat.com**.

4. Reactivate the Satellite Server.

```
# rhn-satellite-activate -vvv --rhn-cert=Satellite-56.cert
RHN_PARENT: satellite.rhn.redhat.com
```

The **rhn-satellite-activate** command requires as input the certificate downloaded in Section 4.1.3, "Obtaining an Entitlement Certificate" . In this example, the certificate was saved in file **Satellite-56.cert**.

When the Satellite Server is reactivated, you may see the message **ERROR: Server not registered? No systemid: /etc/sysconfig/rhn/systemid**. This can be safely ignored because the **systemid** file is the Red Hat Network system ID and no longer relevant.

4.4.5. Installing Behind a HTTP Proxy: Post-Configuration

After a completed installation, modify your settings in the **/etc/rhn/rhn.conf** file:

```
server.satellite.http_proxy = <http-proxy-fqdn>
server.satellite.http_proxy_username = <proxy-username>
server.satellite.http_proxy_password = <proxy-password>

disconnected=0
```

You will also need to update the **/etc/rhn/rhn.conf** file to include the parent parameter *satellite.rhn.redhat.com*:

```
server.satellite.rhn_parent = satellite.rhn.redhat.com
```

> **NOTE**
>
> Alternatively, if you are using the Red Hat Satellite web interface, log in as a user with *Administrator* privileges. Browse to **Admin** → **Red Hat Satellite Configuration** → **General**. From here, enter the HTTP Proxy settings, and toggle the **Disconnected Red Hat Satellite** option.

Restart the Red Hat Satellite service:

```
# rhn-satellite restart
```

Reactivate the Red Hat Satellite as a connected Satellite:

```
# rhn-satellite-activate --rhn-cert=<path-to-cert>
```

You now have a connected Red Hat Satellite communicating behind an HTTP proxy.

4.4.6. Create Administrator User

Follow the on-screen instructions and visit the FQDN of your Red Hat Satellite with your web browser. Create the Administrator account, also referred to as the Organization Administrator, and click the `Create Login` button to continue to the Red Hat Satellite dashboard.

4.4.7. Finalize Configuration

A blue text box appears at the top of the screen indicating that you can now custom-configure the Red Hat Satellite and its behavior. To do so, click the bold `clicking here` text at the end.

4.4.7.1. General Configuration

The `General Configuration` page allows you to alter the most basic settings, such as the Administrator email address and whether Monitoring is enabled.

4.4.7.2. Certificate

The `Certificate` page allows you to upload a new certificate. To identify the certificate's path, click `Browse`, navigate to the file, and select the certificate file. To input its contents, open your certificate in a text editor, copy all lines, and paste them directly into the large text field at the bottom. Red Hat recommends using the file locator as it is less error prone. Click `Update` to continue. If you receive errors related to DNS, ensure Red Hat Satellite is configured correctly.

4.4.7.3. Bootstrap Script

The `Bootstrap Script` page allows you to generate a bootstrap script for redirecting client systems from the central Red Hat Network Servers to Red Hat Satellite. This script, to be placed in the `/var/www/html/pub/bootstrap/` directory of Red Hat Satellite, significantly reduces the effort involved in reconfiguring all systems, which by default obtain packages from the central Red Hat Network Servers. The required fields are pre-populated with values derived from previous installation steps. Ensure this information is accurate.

Checkboxes offer options for including built-in security SSL and GNU Privacy Guard (GPG) features. These options are recommended for security purposes. In addition, you may enable remote command acceptance and remote configuration management of the systems to be bootstrapped here. Both features are useful for completing client configuration. Finally, if you are using an HTTP proxy server, complete the related fields. When finished, click `Generate Bootstrap Script`. The `Installation Complete` page appears.

4.4.8. Organizations

The `Organizations` page contains configuration options for logical groupings of systems, software channels, subscriptions and entitlements. A Red Hat Satellite can manage multiple organizations, each with an individual organization administrator.

4.4.9. Restart

The `Restart` page contains the final step in configuring Red Hat Satellite. Click the `Restart` button to restart Red Hat Satellite in order to incorporate all of the configuration options added on the previous screens. Note that it will take between four and five minutes for the restart to finish.

Once Red Hat Satellite has restarted, the countdown notice disappears. You are now free to begin using your Satellite.

4.4.10. Cobbler Rebuild

The **Cobbler** page contains options to rebuild or refresh Cobbler content if modified outside of Red Hat Satellite.

4.4.11. Message Transfer Agent (MTA) Configuration

If Red Hat Satellite serves Monitoring-entitled systems and you aim to acknowledge via email the alert notifications you receive, configure your Message Transfer Agent (MTA) to properly handle incoming mail. This is required by the email redirect feature, which allows you to stop notifying users about a Monitoring-related event with a single reply.

Sendmail and Postfix are two options for MTAs that can be enabled in the Red Hat Satellite server.

> **NOTE**
>
> Only one MTA may be enabled at one time.

4.4.11.1. Sendmail

To configure **sendmail** correctly, run the following commands as root.

1. Create a symbolic link allowing **sendmail** to run the notification enqueuer with the following command:

   ```
   # ln -s /usr/bin/ack_enqueuer.pl /etc/smrsh/.
   ```

2. Edit the **/etc/aliases** file on the mail server and add the following line:

   ```
   rogerthat01: | /etc/smrsh/ack_enqueuer.pl
   ```

3. Edit the **/etc/mail/sendmail.mc** file and change:

   ```
   "DAEMON_OPTIONS(`Port=smtp,Addr=127.0.0.1, Name=MTA')dnl"
   ```

   to:

   ```
   "DAEMON_OPTIONS(`Port=smtp, Name=MTA')dnl"
   ```

4. Process the alias with the following command:

   ```
   # newaliases
   ```

5. Update the **sendmail-cf** package:

```
# yum update sendmail-cf
```

6. Restart sendmail:

```
# service sendmail restart
```

4.4.11.2. Postfix

To configure **postfix** correctly, run the following commands as root.

1. Create a symbolic link allowing **postfix** to run the notification enqueuer with the following command:

```
# ln -s /usr/bin/ack_enqueuer.pl /etc/smrsh/.
```

2. Edit the **/etc/aliases** file on the mail server and add the following line:

```
rogerthat01: | /etc/smrsh/ack_enqueuer.pl
```

3. Ensure the following line exists in your **/etc/postfix/main.cf** file and change:

```
inet_interfaces = all
```

4. Process the alias with the following command:

```
# newaliases
```

5. Restart postfix:

```
# service postfix restart
```

4.4.12. MySQL Installation for Monitoring

This section only applies if your Red Hat Satellite serves Monitoring-entitled systems and you aim to run **MySQL** probes against them. See the Probes appendix of the *Red Hat Satellite Reference Guide* for a list of available probes.

If you aim to run **MySQL** probes, subscribe the Satellite to the Red Hat Enterprise Linux channel and install the **mysql-server** package either through the Red Hat Network website or with **yum**.

This transaction downloads two extra packages, which are needed for the **mysql-server** package to be installed and run successfully. Once finished, use your Red Hat Satellite to schedule **MySQL** probes.

CHAPTER 5. ENTITLEMENTS

Red Hat Satellite provides all services to customers through entitlements. Customers purchase entitlements as needed from Red Hat. For Red Hat Satellite, entitlements are part of a Red Hat contractual agreement and set at installation time. All *public* channels become automatically available and the *Red Hat Entitlement Certificate* determines the private channels available.

The Entitlement Certificate contains a precise set of entitlements attributed to your organization. Red Hat reserves the right to compare the contents of that Entitlement Certificate with the database's entitlement settings at any time to ensure compliance with the terms of the customer's contract with Red Hat.

The **Red Hat Satellite Installation Script** performs the steps referenced in this section during initial installation. As a result, customers do not require the steps in this section unless they import a new Entitlement Certificate, such as one reflecting an increase in the number of entitlements.

5.1. RED HAT SATELLITE ACTIVATE

For disconnected Satellites or customers who prefer to work locally, Red Hat provides a command line tool for managing your Red Hat Entitlement Certificate and activating the Red Hat Satellite using that certificate: **Red Hat Satellite Activate (`rhn-satellite-activate`)**. This tool is included with the installation as part of the `spacewalk-backend-tools` package.

The `rhn-satellite-activate` tool offers several command line options for activating Red Hat Satellite using its Red Hat Entitlement Certificate:

Table 5.1. Red Hat Entitlement Certificate Options

Option	Description
`-h`, `--help`	Display the help screen with a list of options.
`--sanity-only`	Confirm certificate sanity. Does not activate the Red Hat Satellite locally or remotely.
`--disconnected`	Activates locally but not on remote Red Hat servers.
`--rhn-cert=/PATH/TO/CERT`	Uploads new certificate and activates the Red Hat Satellite based upon the other options passed (if any).
`--systemid=/PATH/TO/SYSTEMID`	*For testing only* - Provides an alternative system ID by path and file. The system default is used if not specified.
`--no-ssl`	*For testing only* - Disable SSL.

To use these options, add the required option and the appropriate value, if needed, after the `rhn-satellite-activate` command.

5.2. ACTIVATE RED HAT SATELLITE WITH A NEW ENTITLEMENT CERTIFICATE

Use the options in Table 5.1, "Red Hat Entitlement Certificate Options" to accomplish the following tasks in this order:

1. Validate the Red Hat Satellite Entitlement Certificate's sanity (or usefulness).

2. Insert the Red Hat Satellite Entitlement Certificate into the local database to activate the Satellite

3. Activate Red Hat Satellite remotely by inserting the Red Hat Entitlement Certificate into the central Red Hat database. This is typically accomplished during local activation but might require a second step if you chose the `--disconnected` option.

Use the following procedure's examples as a guideline for your usage.

Procedure 5.1. Activating Red Hat Satellite with a New Entitlement Certificate

1. To validate the Red Hat Entitlement Certificate's sanity only:

   ```
   rhn-satellite-activate --sanity-only --rhn-cert=/path/to/demo.cert
   ```

2. To validate the Red Hat Entitlement Certificate and populate the local database:

   ```
   rhn-satellite-activate --disconnected --rhn-cert=/path/to/demo.cert
   ```

   Or to validate the Red Hat Entitlement Certificate and populate both the local and the Red Hat database:

   ```
   rhn-satellite-activate --rhn-cert=/path/to/demo.cert
   ```

Once you run this final command, Red Hat Satellite activates, serves packages locally and synchronizes with the central Red Hat Servers. See Chapter 6, *Content and Synchronization* for more information.

5.3. ENTITLEMENT CERTIFICATE EXPIRATION

Red Hat Satellite certificates expire at 11:59:59 PM on the date listed in the certificate's `expires` field, and new certificates become active at 12:00:00 AM on their `issued` date.

A standard *grace period* of seven (7) days exists between the date of Red Hat Satellite's certificate expiration and when the Red Hat Satellite becomes inactive. This grace period is provided in order for customers to contact Red Hat Support and obtain a new certificate. During the grace period, the following things happen:

- Red Hat Satellite remains active, but content cannot be synchronized with the Red Hat Content Delivery Network.

- A banner displays on the `Overview` page for each user that logs into Red Hat Satellite's web interface. This banner states the certificate has expired.

- Once a day, for all seven days, the Red Hat Satellite Administrator receives an email notification regarding certificate expiration.

After this period ends, a *restricted period* of 24 days begins. This period provides a means for resolution of issues reported by `rhn-satellite-activate`. During this period, Satellite has limited functionality mainly for entitlement changes and operates in a *read only* mode.

After the *restricted period*, Red Hat Satellite disables user logins to the web interface. All client-side tools present an `Expired Certificate` message. Red Hat Satellite also send the Administrator a daily email alert regarding certificate expiration.

5.4. ENHANCED ENTITLEMENTS REPORTING

Red Hat Satellite now integrates with Subscription Asset Manager to provide a rich *Enhanced Entitlements Reporting* interface that maps your purchased products to systems registered within Satellite. The Red Hat Customer Portal now provides subscription manifests from Satellite 5-registered systems, which are imported into Subscription Asset Manager to provide the new reporting features. This manifest file contains information about the subscriptions available in the Satellite 5 entitlement certificate.

> **NOTE**
>
> The instructions in this section provide an overview of Enhanced Entitlements Reporting configuration only. For in-depth instructions on Enhanced Entitlements Reporting and Subscription Asset Manager in general, see the *Using Subscription Asset Manager* in the Red Hat Subscription Management documentation suite.

5.4.1. Enhanced Entitlements Reporting Requirements

Enhanced Entitlements Reporting requires two individual servers with the following applications installed respectively:

- Server 1: Red Hat Satellite 5.6 or later

- Server 2: Red Hat Subscription Asset Manager (SAM) 1.3 or later
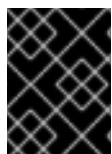
> **IMPORTANT**
>
> Server 2: Subscription Asset Manager (SAM) is supported on Red Hat Enterprise Linux 6 64-bit only.

5.4.2. Summary of Enhanced Entitlement Reporting Configuration

The following steps are required to set up your Red Hat Satellite 5.6 with Enhanced Entitlements Reporting features.

Installation of a Red Hat Satellite 5.6 server

See Chapter 4, *Installation* for installation steps.

Installation and Configuration of a Subscription Asset Manager server

Install a Subscription Asset Manager (SAM) 1.3 server on a different server from Satellite 5.6. When installing from ISO, make sure to run the `install_packages` script with the `--enhanced_reporting` to install the SAM 1.3 with Enhanced Entitlements Reporting:

```
# mkdir /mnt/cdrom
# mount -o loop SAM.iso /mnt/cdrom
```

```
# cd /mnt/cdrom
# ./install_packages --enhanced_reporting
# katello-configure --deployment=sam --user-pass=PASSWORD
# chkconfig mongod on
# service mongod start
```

Alternatively, to install the Subscription Asset Manager (SAM) 1.3 server using **yum**, run the following:

```
# yum install katello-headpin-all splice spacewalk-splice-tool ruby193-
rubygem-splice_reports
# katello-configure --deployment=sam --user-pass=PASSWORD
# chkconfig mongod on
# service mongod start
```

Replace *PASSWORD* with a password of your choice. This password is required in later steps of Enhanced Entitlements Reporting configuration.

The SAM server contains all the tools necessary to collect reporting information from the Satellite 5.6 server. For more information on SAM installation, see the *Using Subscription Asset Manager* guide for version 1.3.

See Section 5.4.3, "Configuring Servers for Enhanced Entitlements Reporting" for further configuration steps.

> **IMPORTANT**
>
> Do not create organizations in Subscription Asset Manager when using in conjunction with Red Hat Satellite 5.6. The `spacewalk-splice-tool` creates the required organizations automatically.

Downloading Entitlement Certificate and Subscription Manifest

Register your Satellite 5.6 server on the `Subscription Management Applications` page of the Red Hat Customer Portal. This provides you with an *Entitlement Certificate* and a *Subscription Manifest*, both of which contain entitlements information for your Satellite 5.6 server. See Chapter 3, *Entitlement Certificate* for steps on generating an Entitlement Certificate and Subscription Manifest pair.

- Upload the *Entitlement Certificate* on your Satellite 5.6 server.

- Upload the *Subscription Manifest* on your SAM server. See Section 5.4.4, "Downloading an Enhanced Entitlements Subscription Manifest" and Section 5.4.5, "Uploading a Subscription Manifest to Subscription Asset Manager" for these steps.

5.4.3. Configuring Servers for Enhanced Entitlements Reporting

The Satellite 5 server requires some configuration to allow successful communication with Subscription Asset Manager. The following procedure provides the necessary steps for configuration.

Procedure 5.2. To Configure Servers for Enhanced Entitlements Reporting

1. Access the terminal on your SAM server using **root** permissions.

2. Generate an SSH key pair on the SAM server:

```
[root@sam13] # su - splice -s /bin/sh -c 'ssh-keygen -t rsa -f
/var/lib/splice/id_rsa-sat -N ""'
```

Make a note of the content of the public key file:

```
[root@sam13] # cat /var/lib/splice/id_rsa-sat.pub
```

3. Access the terminal on your Satellite 5 server using **root** permissions.

4. Create a new **swreport** user on the Satellite 5 machine and provide the user with a **.ssh** directory.

```
[root@sat56] # useradd swreport
[root@sat56] # mkdir /home/swreport/.ssh
```

5. Append the **/home/swreport/.ssh/authorized_keys** file with the contents of the **/var/lib/splice/id_rsa-sat.pub** file on your chosen Subscription Management Application.

6. Prepend the SAM public key content in **/home/swreport/.ssh/authorized_keys** with the following:

```
command="/usr/bin/spacewalk-report $SSH_ORIGINAL_COMMAND"
```

This ensures the **swreport** user only uses the **spacewalk-report** command.

7. Set permissions and the SELinux content on the **.ssh** directory and **authorized_keys** file for the **swreport** user.

```
[root@sat56] # chown -R swreport:swreport /home/swreport/.ssh
[root@sat56] # chmod 700 /home/swreport/.ssh
[root@sat56] # chmod 600 /home/swreport/.ssh/authorized_keys
[root@sat56] # restorecon -R /home/swreport/.ssh
```

8. The **swreport** user requires permissions to read rhn.conf and connect to the database. Add this user to the **apache** group.

```
[root@sat56] # gpasswd -a swreport apache
```

9. Test your connection. Switch to the Subscription Asset Manager server and run the following command:

```
[root@sam13] # su - splice -s /bin/bash
[splice@sam13] # ssh -i /var/lib/splice/id_rsa-sat swreport@sat56-
hostname splice-export
```

Substitute *sat56-hostname* for the hostname of the Subscription Asset Manager server.
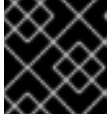
IMPORTANT

This command is required to accept the Satelite 5 server's fingerprint.

10. Edit the **/etc/splice/checkin.conf** on the Subscription Asset Manager server.

```
[root@sam13] # vi /etc/splice/checkin.conf
```

11. Edit the following sections:

```
[spacewalk]
host=hostname
ssh_key_path=/var/lib/splice/id_rsa-sat
login=swreport

[katello]
hostname=localhost
port=443
proto=https
api_url=/sam
admin_user=admin
admin_pass=password
```

Substitute *hostname* for the hostname of the Satellite 5 server and *password* for your SAM administration password. Enter the location of the SAM SSH key for the **ssh_key_path** parameter. Save your changes.

12. Run **spacewalk-splice-checkin** tool as the **splice** user to generate organizations from the Satellite 5 server.

```
[root@sam13] # su - splice -s /bin/bash
[splice@sam13] $ spacewalk-splice-checkin
```

The **spacewalk-splice-checkin** tool also runs as a cronjob on the Subscription Asset Manager server. It reads system and channel data from the Satellite 5 server's **spacewalk-report** tool and pushes the data into the SAM database. Subscription Asset Manager then provides reports to display entitlement consumption for the current state of the systems in Satellite 5 along with historical data.

Before viewing this data, the SAM server requires a subscription manifest that corresponds to the entitlements on your Satellite 5 server.

5.4.4. Downloading an Enhanced Entitlements Subscription Manifest

The following procedure describes the process for downloading a Red Hat Satellite 5 Enhanced Entitlements Subscription Manifest from the Red Hat Customer Portal.
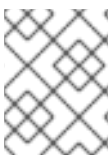
NOTE

See Chapter 3, *Entitlement Certificate* for steps on generating a Subscription Manifest with your Satellite 5 Entitlements Certificate.

Procedure 5.3. To Download an Enhanced Entitlements Manifest

1. Navigate to the Red Hat Customer Portal (`access.redhat.com`) in your web browser.

2. Navigate to **Subscriptions** → **Subscription Management** → **Subscription Management Applications**.

3. Click the `Satellite` tab.

4. Click the name of the Red Hat Satellite 5 server.

5. Click the `Download manifest` button and choose a location to save your manifest.

> **IMPORTANT**
>
> The `Download manifest` button is only available if subscriptions are attached. Ensure to add subscriptions to your manifest by clicking the `Attach a subscription` link.

The Enhanced Entitlements Subscription Manifest is downloaded.

> **IMPORTANT**
>
> Make sure to upload the manifest into the root organization created from the initial run of `spacewalk-splice-tool`.

5.4.5. Uploading a Subscription Manifest to Subscription Asset Manager

These steps show how to upload a subscription manifest to Subscription Asset Manager.

Procedure 5.4. Upload Subscription Manifest

1. Log in to your Subscription Asset Manager as an administrative user.

2. Make sure you set the organization to the root organization from your Satellite 5 server.

3. Click the **Content** → **Subscriptions** → **Red Hat Subscriptions** menu.

4. Click the **+Import Manifest** link.

5. On the Subscription Manifest **Import** tab, click the `Browse` button to specify the location of the manifest.

6. Click the `Upload` button to upload the subscription manifest.

Result:

The subscription manifest is uploaded.

5.4.6. Splitting Subscriptions between Organizations

After uploading the subscription manifest to the root organization in SAM, allocate subscriptions from the root Satellite 5 organization to other organizations from your Satellite 5 server.

Procedure 5.5. To Split Subscriptions between Organizations

1. Log in to your Subscription Asset Manager as an administrative user.

2. Using the organization drop-down menu, set the organization to the root organization from your Satellite 5 server.

3. Navigate to **Content → Subscriptions → Subscription Management Applications**.

4. Click a distributor that represents the chosen organization to receive subscriptions.

5. In the right window, scroll to `Available Sunscriptions` and select the subscriptions and quantity to attach.

6. Click the `Attach` button at the bottom of the window.

7. Using the organization drop-down menu, change to the organization with the newly attached subscriptions.

8. Navigate to **Content → Subscriptions → Red Hat Subscriptions**.

9. Click the **+Import Manifest** link.

10. Click the **Refresh Manifest** button.

Result:

The root organization has assigned subscriptions to another organization from Satellite 5.

5.4.7. Viewing Enhanced Entitlements Reports in Subscription Asset Manager

After configuring the Satellite 5 server and importing the Enhanced Entitlements Subscription Manifest, a user now views Enhanced Entitlement Reports using the Subscription Asset Manager UI.

Procedure 5.6. To View Enhanced Entitlements Reports in Subscription Asset Manager

1. Log in to your Subscription Asset Manager as an administrative user.

2. Navigate to **Administer → Reports**.

3. The `Filter Criteria` page appears. Choose a report and click `Run Report`.

The report populates with data from your desired report options. In addition, use `New Filter` to create a report filter to isolate specific entitlements data from your Satellite 5 server.

CHAPTER 6. CONTENT AND SYNCHRONIZATION

Your Red Hat Satellite Server installation is complete. The next step is to provide it with packages and channels for use with client systems. This chapter explains how to import content and keep it up-to-date.

Ensure to meet the following prerequisites before performing a Red Hat Satellite synchronization:

- A successful Red Hat Satellite installation.

- The Red Hat Satellite requires access to one of the following content sources:

    - The Red Hat Network website over the Internet.

    - Red Hat Network Channel Content ISOs.

    - **Red Hat Satellite Exporter** data.

The sections in this chapter explain the use of the **Red Hat Satellite Synchronization Tool** and its use with each content source type.

6.1. RED HAT SATELLITE SYNCHRONIZATION TOOL

The **Red Hat Satellite Synchronization Tool** (`satellite-sync`) enables an Red Hat Satellite to update its database metadata and RPM packages with various sources.

IMPORTANT

`satellite-sync` imports a large amount of data, especially on newly installed Red Hat Satellite servers. If your database has performance issues after a significant amount of data changes, consider gathering statistics on the database.

To launch the **Red Hat Satellite Synchronization Tool** , execute the following command as root:

```
# satellite-sync
```

The **Red Hat Satellite Synchronization Tool** works incrementally. To obtain errata information, it first requires information about the packages contained. For the packages to be updated, the tool first identifies the associated channel(s). For this reason, the **Red Hat Satellite Synchronization Tool** performs the following actions in order:

1. `channel-families` - Import/synchronize channel family (architecture) data.

2. `channels` - Import/synchronize channel data.

3. `rpms` - Import/synchronize RPMs.

4. `packages` - Import/synchronize full package data for those RPMs retrieved successfully.

5. `errata` - Import/synchronize errata information.

Users can perform each of these steps individually for testing purposes with the effect of forcing the tool to stop when a step completes. All preceding steps, however, will execute. For example, calling the `rpms` step automatically ensures the `channels` and `channel-families` steps execute first. To

initiate an individual step, use the **`--step`** option.

```
# satellite-sync --step=rpms
```

In addition to **`--step`**, the **Red Hat Satellite Synchronization Tool** provides other command line options. To use them, insert the option and the appropriate value after the **`satellite-sync`** command when launching import/synchronization.

Table 6.1. `satellite-sync` Options

Option	Description
`-h, --help`	Display this list of options and exit.
`-d=, --db=DB`	Include alternate database connect string: username/password@SID.
`-m=, --mount-point=MOUNT_POINT`	Import/synchronization from local media mounted to the Red Hat Satellite server. Use in closed environments (such as those created during disconnected installs).
`--list-channels`	List all available channels and exit.
`-c CHANNEL, --channel=CHANNEL_LABEL`	Process data for this channel only. Multiple channels can be included by repeating the option. If no channels are specified, Red Hat Satellite updates all channels.
`-p, --print-configuration`	Print the current configuration and exit.
`--no-ssl`	*Not Advisable* - Turn off SSL.
`--step=STEP_NAME`	Perform the synchronization process *only* to the step specified. Typically used in testing.
`--no-rpms`	Do not retrieve actual RPMs.
`--no-packages`	Do not process full package data.
`--no-errata`	Do not process errata information.
`--no-kickstarts`	Do not process kickstart data (provisioning only).
`--force-all-packages`	Forcibly process all package data without conducting a diff.

Option	Description
`--debug-level=LEVEL_NUMBER`	Override the amount of messaging sent to log files and generated on the screen set in `/etc/rhn/rhn.conf`, 0-6 (2 is default).
`--email`	Email a report of what was imported/synchronized to the designated recipient of traceback email.
`--traceback-mail=TRACEBACK_MAIL`	Direct synchronization output (from `--email`) to this email address.
`-s=`, `--server=SERVER`	Include the hostname of an alternative server to connect to for synchronization.
`--http-proxy=HTTP_PROXY`	Add an alternative HTTP proxy server in the form hostname:port.
`--http-proxy-username=PROXY_USERNAME`	Include the username for the alternative HTTP proxy server.
`--http-proxy-password=PROXY_PASSWORD`	Include the password for the alternative HTTP proxy server.
`--ca-cert=CA_CERT`	Use an alternative SSL CA certificate by including the full path and filename.
`--systemid=SYSTEM_ID`	*For debugging only* - Include path to alternative digital system ID.
`--batch-size=BATCH_SIZE`	*For debugging only* - Set maximum batch size in percent for XML/database-import processing. Open man satellite-sync for more information.

6.2. SYNCHRONIZATION WITH LOCAL MEDIA

Although it is possible to conduct the import directly from the Red Hat Network website, this should be done only if Channel Content ISOs are not available. It takes a long time to populate a channel from scratch over the Internet. For this reason, Red Hat urges you to use ISOs, if they are available, for initial import.

6.2.1. Preparing for Import from Local Media

Channel Content ISOs are special collections that contain both packages and XML dumps of metadata. Download the ISO images from the Red Hat Customer Portal website on a machine connected to the Internet and then transfer to the Red Hat Satellite.

Procedure 6.1. Obtain the Channel Content ISOs

1. Log into the web interface.

2. Click **Channels** in the top navigation bar.

3. Click on the Red Hat Satellite channel. Ensure you select the Satellite channel that corresponds to your version of Satellite.

4. Click the **Downloads** tab and use the instructions on the page to obtain the Channel Content ISOs, available by version of Red Hat Enterprise Linux.

5. If the desired Channel Content ISOs do not appear, ensure your Red Hat Entitlement Certificate has been uploaded to Red Hat Network and correctly identifies the target channels.

This next procedure mounts the Channel Content ISOs and copies the contents to a temporary repository directory.

Procedure 6.2. Mount and copy Channel Content ISOs

1. Log into the machine as root.

2. Create a directory in **/mnt/** to store the file(s) with the command:

   ```
   # mkdir /mnt/import/
   ```

3. Mount the ISO file using the following command:

   ```
   # mount [iso_filename] /mnt/import -o loop
   ```

4. Create a target directory for the files:

   ```
   # mkdir /var/rhn-sat-import/
   ```

5. This sample command assumes the administrator wants to copy the contents of the ISO (mounted in **/mnt/import/**) into **/var/rhn-sat-import/**:

   ```
   # cp -ruv /mnt/import/* /var/rhn-sat-import/
   ```

6. Then unmount **/mnt/import** in preparation for the next ISO:

   ```
   # umount /mnt/import
   ```

7. Repeat these steps for each Channel Content ISO of every channel to be imported.

6.2.2. Import from Local Media

The following process assumes the user has completed Section 6.2.1, "Preparing for Import from Local Media" and copied all data to **/var/rhn-sat-import**.

1. List the channels available for import.

   ```
   # satellite-sync --list-channels --mount-point /var/rhn-sat-import
   ```

2. Initiate the import of a specific channel using a channel label presented in the previous list.

```
# satellite-sync -c [channel-label] --mount-point /var/rhn-sat-
import
```

> **NOTE**
>
> Importing package data can take up to two hours per channel. Register systems to channels as soon as they appear in the Red Hat Satellite web interface. No packages are necessary for registration, although updates cannot be retrieved from the Satellite until the channel is completely populated.

3. Repeat this step for each channel or include them all within a single command by passing each channel label preceded with an additional **-c** flag, like so:

```
# satellite-sync -c [channel-label-1] -c [channel-label-2] --mount-
point /var/rhn-sat-import
```

After running the preceding command, the population of the channel executes until completion. All packages move out of the repository; verify with the following command:

```
# cd /var/rhn-sat-import/; ls -alR | grep rpm
```

If all RPMs are installed and moved to their permanent locations, the count appears as zero. If so, remove the temporary **/var/rhn-sat-import/** repository.

```
# rm -rf /var/rhn-sat-import
```

6.3. SYNCHRONIZATION VIA EXPORT

The **Red Hat Satellite Exporter** (`rhn-satellite-exporter`) tool exports content listing in an XML format, which a user imports into another Red Hat Satellite. Export the content into a chosen directory with the **-d** option, transport the directory to another Red Hat Satellite, and use the **Red Hat Satellite Synchronization Tool** to import the contents. This synchronizes the two Red Hat Satellites so they contain identical content.

The **Red Hat Satellite Exporter** provides the following content:

- Channel Families

- Architectures

- Channel metadata

- Blacklists

- RPMs

- RPM metadata

- Errata

- Kickstarts

To perform a **Red Hat Satellite Exporter** export, meet the following prerequisites:

- A successful Red Hat Satellite installation.

- Sufficient disk space in the directory specified in the **-d** option. This directory will contain the exported contents.

6.3.1. Performing an Export

Export the current Red Hat Satellite configuration into a backup or storage solution by executing the following command as **root**:

```
# rhn-satellite-exporter -d /var/rhn-sat-export --no-errata --channel
[channel_name]
```

When finished, move the exported directory to another Red Hat Satellite or a storage solution using **rsync** or **scp -r**.

The **Red Hat Satellite Exporter** offers several command line options. To use them, insert the option and appropriate value after the **rhn-satellite-exporter** command.

Table 6.2. Red Hat Satellite Exporter Options

Option	Description
-d *DIRECTORY*, **--dir=***DIRECTORY*	Place the exported information into this directory.
-c *CHANNEL_LABEL*, **--channel=***CHANNEL_LABEL*	Process data for this specific channel (specified by label) only. NOTE: the channel's *label* is NOT the same as the channel's *name*.
--list-channels	List all available channels and exit.
--list-steps	List all of the steps that rhn-satellite-exporter takes while exporting data. These can be used as values for --step.
-p --print-configuration	Print the configuration and exit.
--print-report	Print a report to the terminal when the export is complete.
--no-rpms	Do not retrieve actual RPMs.
--no-packages	Do not export RPM metadata.
--no-errata	Do not process errata information.
--no-kickstarts	Do not process kickstart data (provisioning only).

Option	Description
`--debug-level=LEVEL_NUMBER`	Override the amount of messaging sent to log files and generated on the screen set in `/etc/rhn/rhn.conf`, 0-6 (2 is default).
`--start-date=START_DATE`	The start date limit that the last modified dates are compared against. Must be in the format YYYYMMDDHH24MISS (for example, `20071225123000`)
`--end-date=END_DATE`	The end date limit that the last modified dates are compared against. Must be typed in the format YYYYMMDDHH24MISS (for example, `20071231235900`)
`--make-isos=MAKE_ISOS`	Create a channel dump ISO directory called `satellite-isos` (for example, `--make-isos=cd` or `dvd`)
`--email`	Email a report of what was exported and what errors may have occurred.
`--traceback-mail=EMAIL`	Alternative email address for --email.
`--db=DB`	Include alternate database connect string: username/password@SID.
`--hard-links`	Export the RPM and kickstart files with hard links to the original files.

Select the contents, such as RPMs, errata, or kickstarts, to export using these command line options.

The amount of time it takes `rhn-satellite-exporter` to export data depends on the number and size of the exported channels. The `--no-packages`, `--no-kickstarts`, `--no-errata`, and `--no-rpms` options reduce the amount of time required for `rhn-satellite-exporter` to run, but also prevents export of potentially useful information. For that reason, only use these options when certain the content is not required and can be excluded. Additionally, use the matching options for `satellite-sync` when importing the data. For example, if you use `--no-kickstarts` with `rhn-satellite-exporter`, specify the same `--no-kickstarts` option when importing the data.

When exporting a Red Hat Network base channel, export the tools channel associated with that base channel. The tools channels contain the auto-kickstart packages, which install packages for kickstarting a machine through the Red Hat Satellite.

6.3.2. Moving Exported Data

The following procedure copies the **Red Hat Satellite Exporter** data onto the local system for import.

Procedure 6.3. Moving Exporter Content

1. Log into the machine as **root**.

2. Create a target directory for the files, such as:

```
# mkdir /var/rhn-sat-import/
```

3. Make the export data available on the local machine in the directory created in the previous step. Either copy the data directly, or mount the data from another machine using NFS. Copy the data into the new directory with the following command:

```
# scp -r root@storage.example.com:/var/rhn-sat-export/* /var/rhn-sat-import
```

Now that the data is available, proceed with performing the import.

6.3.3. Performing an Import

The following process assumes the user has completed Section 6.3.2, "Moving Exported Data" and copied all data to **/var/rhn-sat-import**.

1. List the channels available for import with the command:

```
# satellite-sync --list-channels --mount-point /var/rhn-sat-import
```

2. Initiate the import of a specific channel using a channel label presented in the previous list. Run the following command :

```
# satellite-sync -c [channel-label] --mount-point /var/rhn-sat-import
```

> **NOTE**
>
> Importing package data can take up to two hours per channel. Register systems to channels as soon as they appear in the Red Hat Satellite web interface. No packages are necessary for registration, although updates cannot be retrieved from the Satellite until the channel is completely populated.

Repeat this step for each channel or include them all within a single command by passing each channel label preceded by an additional **-c** flag:

```
# satellite-sync -c channel-label-1 -c channel-label-2 -mount-point /var/rhn-sat-import
```

3. The population of channels executes until completion. Verify all of the packages are moved out of the repository with the following command:

```
# cd /var/rhn-sat-import/; ls -alR | grep rpm
```

If all RPMs are installed and moved to their permanent locations, the count appears as zero. If so, remove the temporary **/var/rhn-sat-import/** repository.

```
# rm -rf /var/rhn-sat-import
```

6.4. SYNCHRONIZATION WITH RED HAT NETWORK

The `satellite-sync` command also synchronizes a connected Red Hat Satellite with Red Hat Network over the Internet. This updates database metadata and RPM packages directly from the Red Hat Network servers.

Procedure 6.4. Synchronize with Red Hat Network

1. List available channels on your connected Red Hat Satellite using the `--list-channels` command.

   ```
   # satellite-sync --list-channels
   ```

2. Synchronize with a Red Hat Network channel using the `-c` option.

   ```
   # satellite-sync -c [channel-label]
   ```

For more `satellite-sync` options, see Section 6.1, "Red Hat Satellite Synchronization Tool" .

CHAPTER 7. UPGRADES

This chapter examines how to upgrade a pre-existing Red Hat Satellite to version 5.6. Make sure to meet the requirements listed in Section 7.1, "Upgrade Requirements" before running the upgrade procedure.

> **IMPORTANT**
>
> The minimum memory and disk space requirements have increased since version 5.5. Failure to meet these specifications can result in poor Satellite performance or failures for Satellite's services. See Section 2.2, "Red Hat Satellite Server Requirements" for more details on hardware requirements..

7.1. UPGRADE REQUIREMENTS

An upgrade from one version of Red Hat Satellite to another requires the following items:

- An updated Red Hat Satellite certificate

- The Red Hat Satellite Upgrade Package (`rhn-upgrade`)

- The installation media for the latest version of Red Hat Satellite

The following procedure explains how to obtain these items.

Procedure 7.1. Preparing for Red Hat Satellite Upgrade

1. **Obtain Red Hat Satellite Certificate and installation media from the Red Hat Customer Portal**

   a. Obtain a Red Hat Satellite certificate from the Red Hat Customer Portal at https://access.redhat.com/home under **Subscriptions → RHN Classic → Entitlements**.

   b. Save this certificate on your Red Hat Satellite server.

2. **Obtain Red Hat Satellite Upgrade Package (rhn-upgrade)**

   a. Ensure the Satellite is registered to the Red Hat Satellite Channel.

   b. Install the `rhn-upgrade` package with the following command:

   ```
   # yum install rhn-upgrade
   ```

   This package installs scripts and a comprehensive set of instructions for a Red Hat Satellite upgrade within the `/etc/sysconfig/rhn/satellite-upgrade` directory.

3. **Obtain Installation Media**

   a. Obtain a Red Hat Satellite 5.6 ISO from the Red Hat Customer Portal at https://access.redhat.com/home under **Downloads**.

   b. Download this ISO to your Red Hat Satellite server.

7.2. UPGRADING RED HAT SATELLITE TO A NEW VERSION

Once you have obtained the required items for the Red Hat Satellite upgrade, follow the next procedure to upgrade.

> **IMPORTANT**
>
> The following is a basic procedure for upgrading Red Hat Satellite to version 5.6. For comprehensive instructions, see the **/etc/sysconfig/rhn/satellite-upgrade/README** file in the **rhn-upgrade** package.

Procedure 7.2. Upgrade Red Hat Satellite

1. Mount the ISO as specified in Section 4.1.2, "Mounting the Installation Media"

2. Change your directory to the mounted ISO and run the Installer Program using the **--upgrade** option.

   ```
   # cd /mount/cdrom
   # ./install.pl --upgrade
   ```

   > **IMPORTANT**
   >
   > Use additional options if your Red Hat Satellite is *disconnected* or using a *Managed Database* or *External Database*. For more information, read Section 4.2.1, "Options for the Installation Script" .

3. Disable all services on the Red Hat Satellite server:

   ```
   # /usr/sbin/rhn-satellite stop
   ```

   > **IMPORTANT**
   >
   > The next step upgrades the database schema. Ensure the database is running on your *Managed Database* or *External Database*. If using an *Embedded Database*, ensure the database is running via the following command:
   >
   > ```
   > # service postgresql start
   > ```

4. Upgrade the database with **spacewalk-schema-upgrade**:

   ```
   # /usr/bin/spacewalk-schema-upgrade
   ```

   > **IMPORTANT**
   >
   > Make sure to backup your database before upgrading.

5. Activate the Red Hat Satellite. If using a connected Satellite:

   ```
   # rhn-satellite-activate --rhn-cert [PATH-TO-NEW-CERT] --ignore-version-mismatch
   ```

If disconnected, run:

```
# rhn-satellite-activate --rhn-cert [PATH-TO-NEW-CERT] --
disconnected --ignore-version-mismatch
```

6. Rebuild search indexes with the following command:

```
# service rhn-search cleanindex
```

This command cleans the search indexes for the **rhn-search** service and then restart it.

7. Enable Monitoring and Monitoring Scout. To enable Monitoring without enabling Monitoring Scout, run the following command:

```
# /usr/share/spacewalk/setup/upgrade/rhn-enable-monitoring.pl
```

To enable both Monitoring and Monitoring Scout, run the following command:

```
# /usr/share/spacewalk/setup/upgrade/rhn-enable-monitoring.pl --
enable-scout
```

8. Restart all Red Hat Satellite services:

```
# /usr/sbin/rhn-satellite restart
```

The upgrade procedure is complete and Red Hat Satellite is ready to use again.

> **NOTE**
>
> Perform a database vacuum to reclaim space from obsolete tuples. See Section 8.8,
> "Maintaining the Database" for more information.

CHAPTER 8. MAINTENANCE

A Red Hat Satellite requires periodic maintenance. This chapter discusses administrative functions outside of standard use, including how to apply patches to the Red Hat Satellite Server.

8.1. MANAGING RED HAT SATELLITE WITH RHN-SATELLITE

Red Hat Satellite consists of several individual services. Red Hat provides a command line tool (`rhn-satellite`) to stop, start, or retrieve status information from these various services. This tool accepts all of the standard service commands:

```
/usr/sbin/rhn-satellite start
/usr/sbin/rhn-satellite stop
/usr/sbin/rhn-satellite restart
/usr/sbin/rhn-satellite reload
/usr/sbin/rhn-satellite enable
/usr/sbin/rhn-satellite disable
/usr/sbin/rhn-satellite status
```

Use `rhn-satellite` to control Red Hat Satellite's operation and retrieve status messages from all services at once.

8.2. PERFORMING CRITICAL UPDATES TO THE SERVER

Red Hat releases critical updates to Red Hat Satellite in the form of an Erratum.

For Red Hat Satellite systems connected to the Internet, apply these errata updates using the **Red Hat Update Agent** with Red Hat Network. Since the Red Hat Satellite is subscribed to Red Hat Network during initial installation, run the `yum update` on the Red Hat Satellite or use the website at https://access.redhat.com to apply the updates.

> **IMPORTANT**
>
> Apache RPMs do not restart the `httpd` service upon installation. Conducting a full update of the Red Hat Satellite Server (such as with the command `yum update`) might cause Apache to fail. To avoid this, make sure to restart the `httpd` service after upgrading it.

For Red Hat Satellite systems not connected to the Internet, retrieve the packages using a customer account at https://access.redhat.com. Then, apply these packages manually according to instructions in the Errata Advisory.

> **WARNING**
>
> It is *very* important to read the Errata Advisory before applying any Red Hat Satellite Errata Updates. Some Errata Advisories require additional configuration steps to apply certain Red Hat Satellite updates, especially updates to the database. In such cases, the Advisory contains specific and detailed information about necessary steps required.

If you are attempting to only update the server's Red Hat Network Entitlement Certificate, such as to increase its number of client systems, see Chapter 5, *Entitlements* for instructions.

8.3. CHANGING THE RED HAT SATELLITE HOSTNAME

If you need to change the hostname or IP address of your Red Hat Satellite server, the **spacewalk-utils** package contains the **spacewalk-hostname-rename** script.

To use the **spacewalk-hostname-rename** script, you must first ensure that you know your SSL CA passphrase by performing the following command:

```
# openssl rsa -in path/RHN-ORG-PRIVATE-SSL-KEY
```

Enter passphrase when prompted.

spacewalk-hostname-rename requires one mandatory argument, which is the IP address of the Red Hat Satellite server, regardless of whether the IP address will change along with the hostname or not.

The usage of **spacewalk-hostname-rename** is as follows:

```
spacewalk-hostname-rename <ip address> [ --ssl-country=<country> --ssl-state=<state>\
--ssl-org=<organization/company> --ssl-orgunit=<department> --ssl-email=<email address> --ssl-ca-password=<password>]
```

If there is a need to generate a new SSL certificate, the script asks for all necessary information through a series of prompts, unless options are passed at the command line (as in the above example). When the system hostname has not changed, the regeneration of a new SSL server certificate is unnecessary. However, if at least one SSL option is specified, then **spacewalk-hostname-rename** generates a new certificate.

For more information about using **spacewalk-hostname-rename**, see the following Red Hat Knowledgebase entry:

https://access.redhat.com/site/solutions/30596

8.4. CONDUCTING RED HAT SATELLITE-SPECIFIC TASKS

Using the Red Hat Satellite web interface is similar to using the hosted version of Red Hat Network. For this reason, consult the *Red Hat Satellite Reference Guide* to obtain detailed instructions for standard tasks, such as editing System Profiles and updating packages. Tasks directly related to managing

custom channels and errata are covered in the *Red Hat Satellite Channel Management Guide* This section seeks to explain activities available only to Red Hat Satellite customers.

8.4.1. Deleting Users

Due to the isolated environment in which Red Hat Satellites operate, Red Hat grants customers the ability to delete users. To delete users:

1. Click `Users` in the top navigation bar of the Red Hat Network website.

2. Click the name of the user to be removed.

3. Click the `delete user` link at the top-right corner of the page.

4. A confirmation page appears explaining that this removal is permanent. To continue, click `Delete User` at the bottom-right corner of the page.

> **NOTE**
>
> Remove the Organization Administrator role from the user's profile before deleting the user from the Red Hat Satellite. Failing to do so causes the delete operation to fail.
>
> Any Organization Administrator may remove the Organization Administrator role provided they are not the sole Organization Administrator for the organization. To do so, click the `Users` tab and then click the `Details` subtab.

Many other options exist for managing users. You can find instructions for them in the Red Hat Network website chapter of the *Red Hat Satellite Reference Guide*

8.4.2. Configuring Red Hat Satellite Search

Red Hat Satellite Administrators can configure certain search options to customize search results for their own optimization requirements.

Customize Red Hat Satellite search results with the `/usr/share/rhn/config-defaults/rhn_search.conf` file. The following list defines the search configuration and their default values in parentheses.

search.index_work_dir

Specifies where Lucene indexes are kept (`/usr/share/rhn/search/indexes`).

search.rpc_handlers

Semi-colon separated list of classes to act as handlers for XMLRPC calls.

```
(filename>index:com.redhat.satellite.search.rpc.handlers.IndexHandler,
db:com.redhat.satellite.search.rpc.handlers.DatabaseHandler,
admin:com.redhat.satellite.search.rpc.handlers.AdminHandler)
```

search.max_hits_returned

Maximum number of results which will be returned for the query (`500`).

search.connection.driver_class

JDBC driver class to conduct database searches (`oracle.jdbc.driver.OracleDriver`).

search.score_threshold

Minimum score a result needs to be returned back as query result (`.10`).

search.system_score_threshold

Minimum score a system search result needs to be returned back as a query result (`.01`).

search.errata_score_threshold

Minimum score an errata search result needs to be returned back as a query result (`.20`).

search.errata.advisory_score_threshold

Minimum score an errata advisory result needs to be returned back as a query result (`.30`).

search.min_ngram

Minimum length of n-gram characters. Note that any change to this value requires `clean-index` to be run, and doc-indexes need to be modified and rebuilt (`1`).

search.max_ngram

Maximum length of n-gram characters. Note that any change to this value requires `clean-index` to be run, and doc-indexes need to be modified and rebuilt (`5`).

search.doc.limit_results

Type `true` to limit the number of results both on search.score_threshold and restrict max hits to be below search.max_hits_returned; type `false` means to return all documentation search matches (`false`).

search.schedule.interval

Input the time in milliseconds to control the interval with which the SearchServer polls the database for changes; the default is 5 minutes (`300000`).

search.log.explain.results

Used during development and debugging. If set to true, this will log additional information showing what influences the score of each result (`false`).

8.5. AUTOMATING SYNCHRONIZATION

Manually synchronizing the Red Hat Satellite repository with Red Hat Network is a time-intensive task. United States business hours tend to be the peak usage time for Red Hat Network, so synchronization during that time can be slow. Red Hat encourages customers to automate synchronization at other times to better balance load and ensure quick synchronization. Continental United States business hours are roughly 8:00 AM to 9:00 PM EST (UTC -5), due to four time zones, Monday through Friday. These hours vary seasonally by one hour. *Red Hat strongly recommends synchronization during a particular time range. This ensures better synchronization performance.*

Set this automation with the addition of a simple cron job. Edit the crontab as **root**:

```
crontab -e
```

■

This opens the crontab in your default text editor.

> **NOTE**
>
> Change your default text editor using the **EDITOR** variable, like so: **export EDITOR=gedit**. Choosing a graphical editor will require an enabled graphical interface.

Once opened, use the first five fields (minute, hour, day, month, and weekday) to schedule the synchronization. Use 24-hour clock format. Edit the crontab to include random synchronization, like so:

```
0 1 * * * perl -le 'sleep rand 9000' && satellite-sync --email >/dev/null \
2>/dev/null
```

This cronjob will run randomly between 1:00 a.m. and 3:30 a.m. system time each night and redirect **stdout** and **stderr** from **cron** to prevent duplicating the more easily read messages from **satellite-sync**. Use other options from Table 6.1, "**satellite-sync** Options" if necessary.

After saving the file and exiting the editor, the system installs the modified crontab immediately.

8.6. IMPLEMENTING PAM AUTHENTICATION

Red Hat Satellite supports network-based authentication systems such as LDAP and Kerberos, using Pluggable Authentication Modules (PAM). PAM is a suite of libraries that helps system administrators integrate the Satellite with a centralized authentication mechanism, thus eliminating the need for remembering multiple passwords.

> **NOTE**
>
> To ensure that PAM authentication functions properly, install the **pam-devel** package.
>
> ```
> # yum install pam-devel
> ```
>
> Also make sure to update to the latest **selinux-policy-targeted** package.
>
> ```
> # yum update selinux-policy-targeted
> ```

Procedure 8.1. Configuring Red Hat Satellite to use PAM

1. Set the **allow_httpd_mod_auth_pam** SELinux boolean to on:

   ```
   # setsebool -P allow_httpd_mod_auth_pam 1
   ```

2. Open the **/etc/rhn/rhn.conf** file in your preferred text editor, and add the following line:

   ```
   pam_auth_service = rhn-satellite
   ```

   Create a PAM service file in the **/etc/pam.d/** directory:

   ■

```
# touch /etc/pam.d/rhn-satellite
```

3. Edit the file and add one of the following, depending on your authentication method:

   Example 8.1. SSSD Authentication

   ```
   #%PAM-1.0
   auth          required      pam_env.so
   auth          sufficient    pam_sss.so
   auth          required      pam_deny.so
   account       sufficient    pam_sss.so
   account       required      pam_deny.so
   ```

   Example 8.2. Kerberos Authentication

   ```
   #%PAM-1.0
   auth          required      pam_env.so
   auth          sufficient    pam_krb5.so no_user_check
   auth          required      pam_deny.so
   account       required      pam_krb5.so no_user_check
   ```

   Example 8.3. LDAP Authentication

   ```
   #%PAM-1.0
   auth          required      pam_env.so
   auth          sufficient    pam_ldap.so no_user_check
   auth          required      pam_deny.so
   account       required      pam_ldap.so no_user_check
   ```

   For more detail about configuring PAM, see the *Pluggable Authentication Modules (PAM)* in the *Red Hat Enterprise Linux Deployment Guide*

   NOTE

   For Kerberos-authenticating users, change the password by using **kpasswd.** Do not change the password on Red Hat Satellite web application as this method only changes the local password on the Satellite server. Local passwords are not in use if PAM is enabled for that user.

4. Restart the service to pick up the changes:

   ```
   # rhn-satellite restart
   ```

5. To enable a user to authenticate against PAM, select the checkbox labeled **Pluggable Authentication Modules (PAM).** It is positioned below the password and password confirmation fields on the **Create User** page.

8.7. ENABLING PUSH TO CLIENTS

In addition to allowing client systems to regularly poll the Satellite for scheduled actions, users can enable the Satellite to immediately initiate those actions on provisioning-entitled systems. This bypasses the typical delay between scheduling an action and the client system retrieving the action from Red Hat Network. The OSA dispatcher (`osa-dispatcher`) provides support for this feature.

OSA dispatcher is a service that periodically runs a query to check the Red Hat Satellite server for any commands to execute on the client. If any actions exist, it sends a message through `jabberd` to the osad instances running on the clients.

IMPORTANT

It is mandatory to use SSL between the Red Hat Satellite and clients systems for this feature to work. If the SSL certificates are not available, the daemon on the client system fails to connect.

To use this feature, first configure your firewall rules to allow connections on the required port(s), as described in Section 2.4, "Additional Requirements".

Install the `osa-dispatcher` package, which is contained in the Red Hat Satellite software channel for on the Customer Portal. Once installed, start the service on the Satellite as **root** using the following command:

```
service osa-dispatcher start
```

Finally, install the `osad` package on all client systems to receive pushed actions. Find this package within the Red Hat Network Tools child channel on the Red Hat Satellite.

WARNING

Do *not* install the `osad` package on the Red Hat Satellite server. This package conflicts with the `osa-dispatcher` package installed on the server.

Once installed, start the service on the client systems as **root** using the command:

```
service osad start
```

Like other services, `osa-dispatcher` and `osad` accept `stop`, `restart`, and `status` commands, as well.

This feature depends on client systems recognizing the fully qualified domain name (FQDN) of the Satellite. The client systems use this name and not the IP address of the server when configuring the **Red Hat Update Agent**. See the *Red Hat Satellite Client Configuration Guide* for more details.

Now when you schedule actions from the Red Hat Satellite to any push-enabled system, the task begins immediately rather than waiting for the system to check with Red Hat Network.

8.8. MAINTAINING THE DATABASE

It is usually recommended to provide database maintenance on a regular basis. For example, you might aim to set up a cronjob to clean redundant data from the database. Accomplish this using the following commands:

```
# su postgres -
bash-4.1$ psql -d rhnschema -c 'VACUUM;'
bash-4.1$ exit
```

This changes to the **postgres** user to access the Satellite 5 database (**rhnschema**) and perform a **VACUUM** on the database tables. This reclaims storage that dead tuples occupy. Deleted or obsolete tuples are not usually physically removed from their table and remain present until performing a **VACUUM**.

CHAPTER 9. MIGRATING FROM RHN TO RHSM

Red Hat Network is nearing end of life, so existing Red Hat Satellite 5 installations must be migrated to Red Hat Subscription Management. This chapter provides the instructions for migrating an existing Red Hat Satellite 5.6 installation.

Red Hat Satellite 5 currently requires access to Red Hat Network for both subscription registration and content hosting. When a system is registered to Red Hat Network, a system ID is created. The system authenticates to Red Hat Network with its system ID, entitling it to receive updates, errata, and synchronize content. Without a valid system ID, a system cannot receive updates or synchronize content.

Before Red Hat Network is retired, Satellite 5.6 systems must have their registration migrated to Red Hat Subscription Management. When a host is migrated from Red Hat Network to Red Hat Subscription Management, the system ID is deleted, and replaced with a subscription management UUID. Satellite 5.6 systems whose registration has been migrated to Red Hat Subscription Manager will continue to synchronize content with Red Hat Network.

Red Hat Satellite 5.6 can be installed with either an embedded database, a managed database, or an external database. Each of these configurations requires the Satellite 5.6 host's registration to be migrated. A managed database is a Satellite database hosted on its own instance of Red Hat Enterprise Linux, itself registered to the Red Hat Network. In the managed database configuration, the managed database host's registration must also be migrated. Hosts managed by the Satellite 5.6 host continue to get their subscriptions and content from the Satellite server.

> **WARNING**
>
> Registration migration from Red Hat Network to Red Hat Subscription Manager is a one-way process. Red Hat recommends you take a complete backup of the Satellite 5.6 system prior to proceeding.

To migrate the Satellite 5 host's registration, complete the following procedures:

1. Procedure 9.1, " Upgrading the Satellite 5 Database Schema " (if required).

2. Procedure 9.2, " Removing the Satellite 5 Subscription from Red Hat Network " .

3. Procedure 9.3, " Migrating the Satellite 5 Registration ".

To migrate the Managed Database host's registration, complete the following procedures:

1. Procedure 9.2, " Removing the Satellite 5 Subscription from Red Hat Network " .

2. Procedure 9.3, " Migrating the Satellite 5 Registration ".

Procedure 9.1. Upgrading the Satellite 5 Database Schema

Before proceeding with the migration, it is important that the Satellite 5 database schema be up to date.

- On the Satellite 5 server, list packages for which updates are applicable.

```
# yum check-update
```

If there is an update pending for the **satellite-schema** package, complete the procedure detailed in *How to upgrade the database schema of a Red Hat Satellite 5 server*

Procedure 9.2. Removing the Satellite 5 Subscription from Red Hat Network

The Satellite 5 subscription must be removed from Red Hat Network so that the subscription can be applied via Red Hat Subscription Manager.

1. Open a web browser, log into the Red Hat Customer Portal, click **Subscriptions**, click **Satellite** in the list of Subscription Management Applications, then click on the **Satellite** tab.

2. Find the desired Satellite instance in the list, and click on the host name.

Figure 9.1. Details of the Satellite 5 Subscription

3. Click the check box beside the **Red Hat Satellite** subscription to be migrated, click **Remove Selected**, then click **Remove** to confirm.

> **WARNING**
>
> Remove **only** the **Red Hat Satellite** subscription. All other subscriptions must remain.

The successful removal of the Red Hat Satellite subscription is confirmed by the message: **The subscription(s) you selected have been removed.**

4. Click **Download Satellite Certificate** and save the certificate file locally.

The Satellite 5 entitlement certificate, contained in the file downloaded, is required in
Procedure 9.3, " Migrating the Satellite 5 Registration ".

Procedure 9.3. Migrating the Satellite 5 Registration

1. Record the Red Hat Network username which was used to register the Red Hat
   Enterprise Linux instance. This username and its password is required by the migration script.

   ```
   # grep -A1 name\>username /etc/sysconfig/rhn/systemid
   ```

   In this example, the username is **admin@example.com**.

   ```
   <name>username</name>
   <value><string>admin@example.com</string></value>
   ```

2. On the Satellite 5 server, ensure that all packages are current.

   ```
   # yum update
   ```

3. Confirm the version of the **spacewalk-backend** package is at version **2.0.3-42** or higher.

   > **NOTE**
   >
   > If this is the Managed DB host, skip this step.

   ```
   # rpm -q spacewalk-backend
   spacewalk-backend-2.0.3-42.el6sat.noarch
   ```

   > **WARNING**
   >
   > If version 2.0.3-42 (or higher) of **spacewalk-backend** package is not
   > available, or cannot be installed, do **NOT** proceed with the migration.
   > Contact Red Hat Support for assistance.

4. Install the packages **subscription-manager** and **subscription-manager-migration**.

   The **subscription-manager-migration** package contains the Satellite 5 subscription
   script.

   ```
   # yum install subscription-manager
   # yum install subscription-manager-migration
   ```

5. Run the Satellite 5 Red Hat Network to Red Hat Subscription Manager migration script.

```
# rhn-migrate-classic-to-rhsm
Legacy username: Red Hat Network username
Legacy password:  Red Hat Network password
```

The **Legacy username** and **Legacy password** are the same credentials which were used to register the server to Red Hat Network. The username was obtained in the prior step.

Example output from **rhn-migrate-classic-to-rhsm**.

```
Retrieving existing legacy subscription information...

+------------------------------------------------------+
System is currently subscribed to these legacy channels:
+------------------------------------------------------+
rhel-x86_64-server-6
redhat-rhn-satellite-5.6-server-x86_64-6

+------------------------------------------------------+
Installing product certificates for these legacy channels:
+------------------------------------------------------+
rhel-x86_64-server-6
redhat-rhn-satellite-5.6-server-x86_64-6

Product certificates installed successfully to /etc/pki/product.

Preparing to unregister system from legacy server...
System successfully unregistered from legacy server.

Attempting to register system to destination server...
Registering to: subscription.rhsm.redhat.com:443/subscription
The system has been registered with ID: 284e025c-4a60-4084-b49c-
4cb26fd7cf93

Installed Product Current Status:
Product Name: Red Hat Enterprise Linux Server
Status:        Subscribed

Product Name: Red Hat Satellite
Status:        Subscribed

System 'satellite.example.com' successfully registered.
```

The message **System 'satellite.example.com' successfully registered.** confirms that the Satellite 5 system's migration to Red Hat Subscription Manager has been successful. In this example, the Satellite 5 server has been given a Red Hat Subscription Management UUID of **284e025c-4a60-4084-b49c-4cb26fd7cf93**.

6. Disable all repositories.

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

7. Enable *only* the following repositories.

   For Red Hat Enterprise Linux 6

   ▪

```
# subscription-manager repos --enable rhel-6-server-rpms
# subscription-manager repos --enable rhel-6-server-satellite-5.6-
rpms
```

For Red Hat Enterprise Linux 5

```
# subscription-manager repos --enable rhel-5-server-rpms
# subscription-manager repos --enable rhel-5-server-satellite-5.6-
rpms
```

8. Reactivate the Satellite 5 instance.

> **NOTE**
>
> If this is the Managed DB host, skip this step.

The **rhn-satellite-activate** command requires the certificate downloaded in Procedure 9.2, " Removing the Satellite 5 Subscription from Red Hat Network " . In this example, the certificate was saved in file **Satellite-56.cert**.

```
# rhn-satellite-activate -vvv --rhn-cert=Satellite-56.cert
RHN_PARENT: satellite.rhn.redhat.com
```

When the Satellite Server is reactivated, you may see the following error message. This is expected, and can be safely ignored, because the **systemid** file is the Red Hat Network system ID. The system ID file is deleted when the host's registration is migrated to Red Hat Subscription Manager.

```
ERROR: Server not registered? No systemid:
/etc/sysconfig/rhn/systemid
```

9. If Satellite is installed on Red Hat Enterprise Linux 6, optionally remove the packages which were previously used to communicate with Red Hat Network.

> **WARNING**
>
> Do not remove the packages if Satellite is installed on Red Hat Enterprise Linux 5. Removing these packages from Red Hat Enterprise Linux 5 will result in the failure of Satellite.

```
# yum remove yum-rhn-plugin rhn-check rhn-setup rhnsd
```

APPENDIX A. EXAMPLE RED HAT SATELLITE INSTALLATION TOPOLOGIES

The Red Hat Satellite can be installed and configured in multiple ways. Select one method depending on the following factors:

- The total number of client systems to be served by the Red Hat Satellite.

- The maximum number of clients expected to connect *concurrently* to the Red Hat Satellite.

- The number of custom packages and channels to be served by the Red Hat Satellite.

- The number of Red Hat Satellites being used in the customer environment.

- The number of Red Hat Proxy Servers being used in the customer environment.

The rest of this chapter describes possible configurations and explains their benefits.

A.1. SINGLE RED HAT SATELLITE TOPOLOGY

The simplest configuration is to use a single Red Hat Satellite to serve your entire network. This configuration is adequate to service a medium-size group of clients and network.

The disadvantage of using one Red Hat Satellite is that performance will be compromised as the number of clients requesting packages grows.
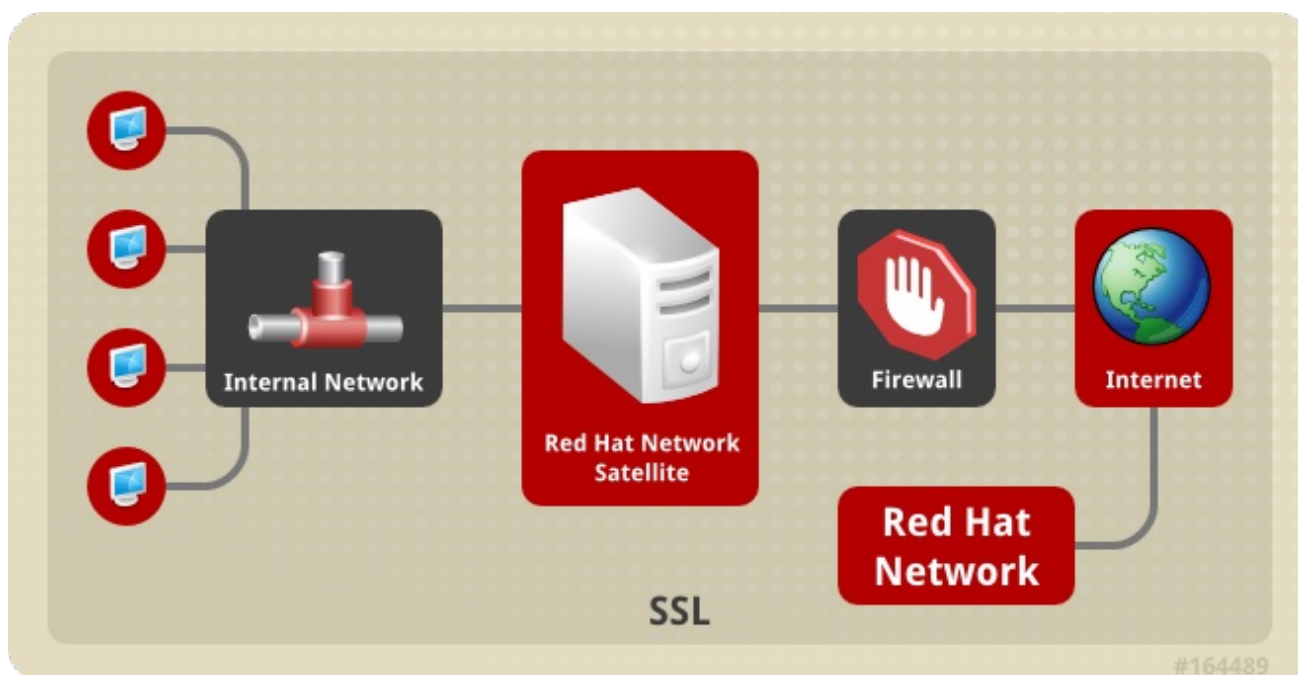
Figure A.1. Single Red Hat Satellite Topology

A.2. MULTIPLE RED HAT SATELLITE HORIZONTALLY TIERED TOPOLOGY

For very large networks, a more distributed method may be needed, such as having multiple Red Hat Satellites in a horizontally tiered configuration and balancing the load of client requests.

It is possible to synchronize content between Red Hat Satellites using the `rhn-satellite-`

exporter and **satellite-sync -m** commands. Alternatively, the Inter-Satellite Sync 2 feature is designed for this purpose.

Additional maintenance is the biggest disadvantage of this horizontal structure.
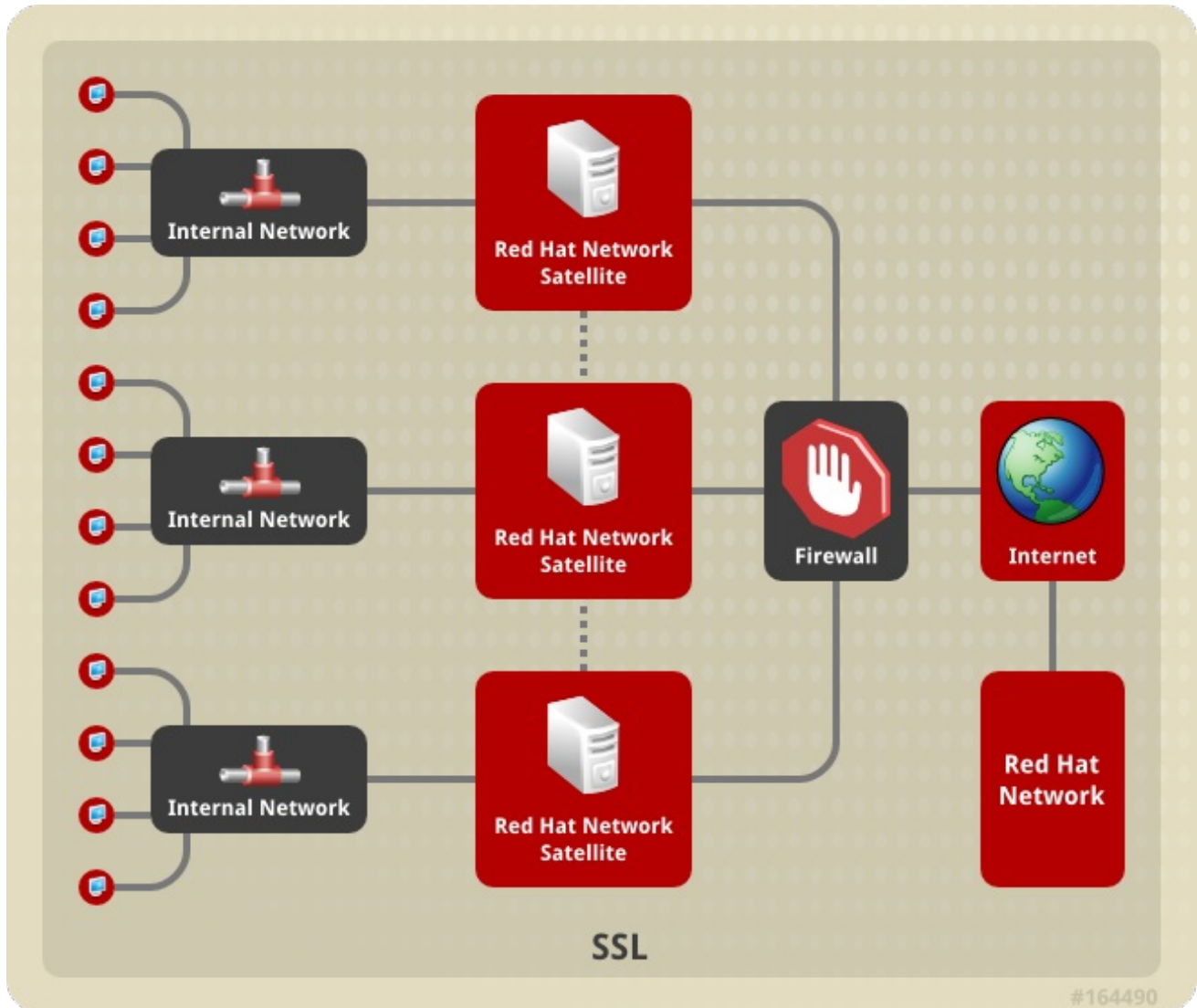
Figure A.2. Multiple Red Hat Satellite Horizontally Tiered Topology

A.3. RED HAT SATELLITE-TO-PROXY VERTICALLY TIERED TOPOLOGY

An alternative method to balance load is to install Red Hat Proxy Servers below a Red Hat Satellite. These Proxies connect to the Red Hat Satellite for RPMs from Red Hat Network and custom packages created locally. In essence, the Red Hat Proxy Servers act as clients of Red Hat Satellite.

This vertically tiered configuration requires that channels and RPMs be created only on the Red Hat Satellite. In this manner, the Red Hat Proxy Servers inherit and then serve packages from a central location. For details, see the *Red Hat Satellite Channel Management Guide*

The Red Hat Proxy Servers' SSL certificates should also be set up so that the Red Hat Proxy Servers become clients of the Red Hat Satellite. These Proxy servers should also be set up to serve content out to client systems simultaneously. This process is described in the *Red Hat Satellite Client Configuration Guide*.
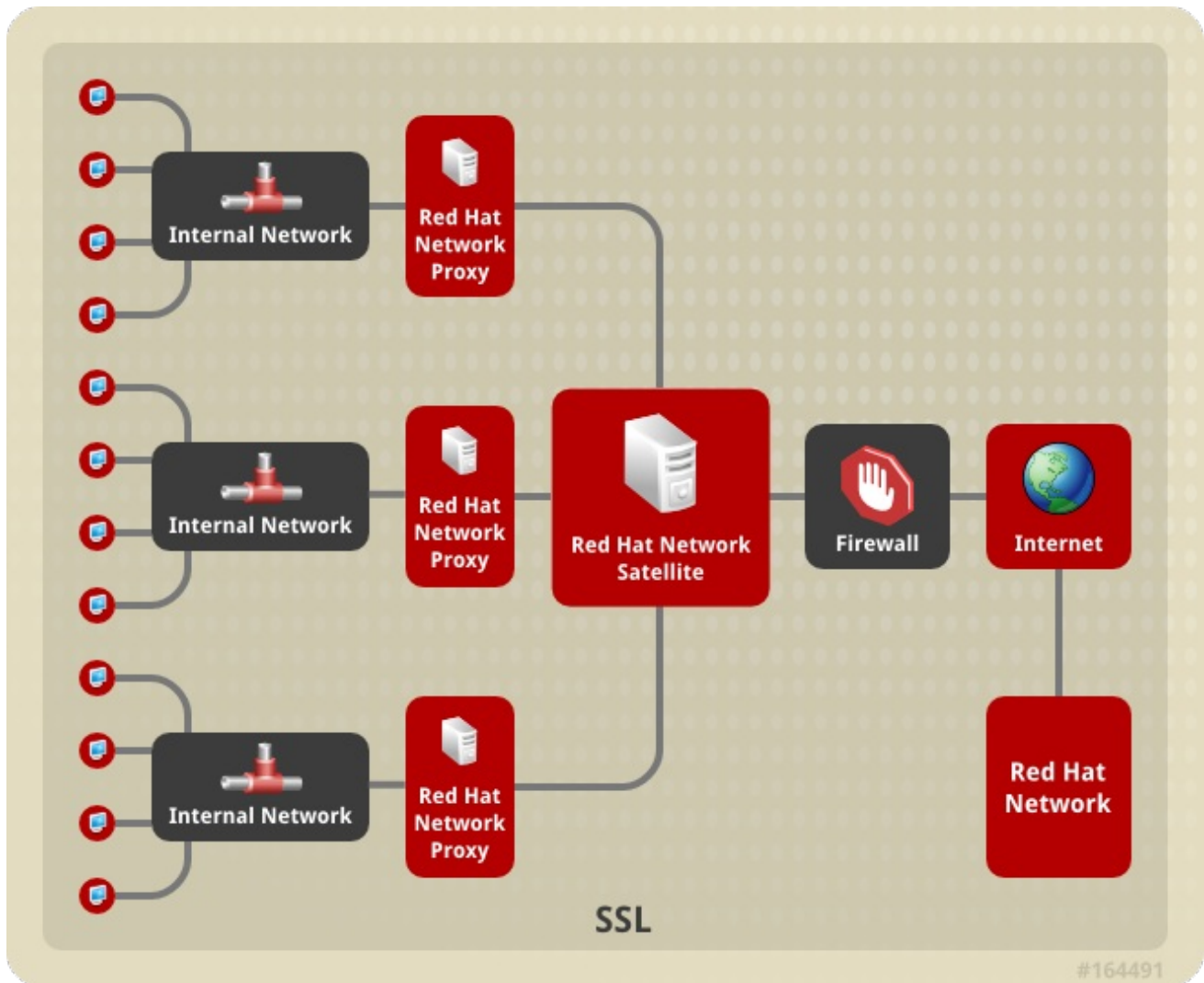
Figure A.3. Red Hat Satellite-to-Proxy Vertically Tiered Topology

APPENDIX B. SAMPLE RED HAT SATELLITE CONFIGURATION FILE

The **/etc/rhn/rhn.conf** configuration file for the Red Hat Satellite provides a means for you to establish key settings. Be warned, however, that errors inserted into this file may cause Satellite failures. So make configuration changes with caution.

You should be particularly concerned with the following parameters: traceback_mail, default_db, and server.satellite.http_proxy. Review the sample and its comments, beginning with a hash mark (#), for additional details.

```
#/etc/rhn/rhn.conf example for a Red Hat Satellite
#------------------------------------------------

# Destination of all tracebacks, such as crash information, etc.
traceback_mail = test@pobox.com, test@redhat.com
mount_point = /var/satellite
kickstart_mount_point = /var/satellite
repomd_cache_mount_point = /var/cache
server.satellite.rhn_parent = satellite.rhn.redhat.com

# Use proxy FQDN, or FQDN:port
server.satellite.http_proxy =
server.satellite.http_proxy_username =
server.satellite.http_proxy_password =
server.satellite.ca_chain = /usr/share/rhn/RHNS-CA-CERT

# Use these options if this server is intended to be a slave.
# Name of parent for ISS.
# # If left blank rhn_parent is taken by default.
# # This option can be overriden on satellite-sync command line.
iss_parent      =
iss_ca_chain    = /usr/share/rhn/RHN-ORG-TRUSTED-SSL-CERT

# Use this option if this server is intended to be a master
# Comma separated list of allowed iss slaves, like:
# allowed_iss_slaves=slave1-satellite.redhat.com,slave2-
satellite.redhat.com
allowed_iss_slaves=

# Completely disable ISS.
# If set to 1, then no slave will be able to sync from this server
# this option does not affect ability to sync to this server from
# another spacewalk (or hosted).
disable_iss=0

db_backend = postgresql
db_user = rhnuser
db_password = rhnpw
db_name = rhnschema
db_host =
db_port =

server.nls_lang = english.UTF8
```

```
hibernate.dialect=org.hibernate.dialect.PostgreSQLDialect
hibernate.connection.driver_class=org.postgresql.Driver
hibernate.connection.driver_proto=jdbc:postgresql


web.satellite = 1
web.satellite_install =

web.session_swap_secret_1 = 9c3da20106d2968d838ee0e8a0431d25
web.session_swap_secret_2 = 9d6dcb05f90586c9aa0cba72328f9abb
web.session_swap_secret_3 = 296ddef52ea5df4bc5ee666a238c0454
web.session_swap_secret_4 = 0863e7427021c045fe4c19dbd3db1900

session_secret_1 = 2ae50e0414ecc9d42e15fece90cce4b5
session_secret_2 = da2abb2f77c328f879d7b4f24a2d68fa
session_secret_3 = 60531c88064d0d00edbfe683a1c962da
session_secret_4 = 1af4c9e335d427761d17bb93d051df87

server.secret_key = d8e7f083a9c40bf76d09c38fb5d0e52b

encrypted_passwords = 1

web.param_cleansers = RHN::Cleansers->cleanse
web.base_acls = RHN::Access

web.restrict_mail_domains =

web.ssl_available = 1

web.is_monitoring_backend = 1
web.is_monitoring_scout = 1

# OSA configuration #

server.jabber_server = sat560.usersys.redhat.com
osa-dispatcher.jabber_server = sat560.usersys.redhat.com

# set up SSL on the dispatcher
osa-dispatcher.osa_ssl_cert = /var/www/html/pub/RHN-ORG-TRUSTED-SSL-CERT

# Enable Solaris support

web.enable_solaris_support = 0

# force removing entitlements from systems when modifying multiorg
entitlements
# below the current usage amount.
web.force_unentitlement=0

# system snapshots enabled
enable_snapshots = 1

#cobbler host name
cobbler.host = sat560.usersys.redhat.com
#option generated from rhn-config-satellite.pl
web.subscribe_proxy_channel=1
```

```
#option generated from rhn-config-satellite.pl
force_package_upload=1

#option generated from rhn-config-satellite.pl
enable_nvrea=0

#option generated from rhn-config-satellite.pl
web.default_mail_from=RHN Satellite dev-null@localhost

#option generated from rhn-config-satellite.pl
web.l10n_resourcebundles=com.redhat.rhn.frontend.strings.jsp.StringPackage
,com.redhat.rhn.frontend.strings.java.StringPackage,com.redhat.rhn.fronten
d.strings.database.StringPackage,com.redhat.rhn.frontend.strings.nav.Strin
gPackage,com.redhat.rhn.frontend.strings.template.StringPackage,com.redhat
.rhn.branding.strings.StringPackage

#option generated from rhn-config-satellite.pl
product_name=RHN Satellite

#option generated from rhn-config-satellite.pl
web.version=5.6.0 beta

#option generated from rhn-config-satellite.pl
disconnected=1
```

APPENDIX C. REVISION HISTORY

Revision 4-41	**Tue Sep 19 2017**	**Satellite Documentation Team**
Added information on the required CPU count.		
Revision 4-40	**Sat Jul 22 2017**	**Satellite Documentation Team**
Updated the content on entitlement certificate expiration.		
Revision 4-39	**Fri Apr 28 2017**	**Satellite Documentation Team**
Added instructions on how to migrate from RHN to RHSM.		
Revision 4-38	**Wed Sep 9 2015**	**Dan Macpherson**
Added missing PostgreSQL configuration for External DBs		
Revision 4-37	**Thu Aug 20 2015**	**Dan Macpherson**
Mass publication of all Satellite 5.6 books		
Revision 4-36	**Mon Aug 17 2015**	**Dan Macpherson**
Adding postgresql VACUUM commands Adding note about increased minimum memory and storage specifications		
Revision 4-35	**Wed May 27 2015**	**Dan Macpherson**
New entitlement certificate instructions		
Revision 4-34	**Tue Mar 17 2015**	**Dan Macpherson**
Minor retroactive fixes		
Revision 4-33	**Fri Oct 17 2014**	**Dan Macpherson**
Refresh for poor PDF generation since last publican version		
Revision 4-32	**Mon Mar 31 2014**	**Dan Macpherson**
Added admonition to Enhanced Entitlements Reporting section		
Revision 4-31.400	**2013-10-31**	**Rüdiger Landmann**
Rebuild with publican 4.0.0		
Revision 4-31	**Fri Sep 27 2013**	**Dan Macpherson**
Final version of documentation suite		
Revision 4-30	**Wed Sep 18 2013**	**Dan Macpherson**
Minor change regarding base OS requirments		
Revision 4-29	**Tue Sep 17 2013**	**Dan Macpherson**
Minor changes		
Revision 4-28	**Mon Sep 16 2013**	**Dan Macpherson**
Minor changes		
Revision 4-27	**Thu Sep 12 2013**	**Dan Macpherson**
Minor changes		
Revision 4-26	**Thu Sep 12 2013**	**Dan Macpherson**
Minor changes		
Revision 4-25	**Thu Sep 12 2013**	**Dan Macpherson**
Modified RHEL support statement		

Revision 4-24   **Wed Sep 11 2013**   **Dan Macpherson**
Converting admonition to step in Enhanced Reporting section

Revision 4-23   **Tue Sep 10 2013**   **Dan Macpherson**
Revised Subtitle, Abstract and Preface for all Guides

Revision 4-22   **Mon Sep 9 2013**   **Dan Macpherson**
Minor change

Revision 4-21   **Mon Sep 9 2013**   **Dan Macpherson**
Minor addition

Revision 4-20   **Mon Sep 9 2013**   **Dan Macpherson**
Enhanced Entitlements Reporting revisions

Revision 4-19   **Mon Sep 9 2013**   **Dan Macpherson**
Minor fix

Revision 4-18   **Mon Sep 9 2013**   **Dan Macpherson**
Implementing Enhanced Entitlements Reporting section

Revision 4-17   **Mon Sep 9 2013**   **Dan Macpherson**
Fixing section ids

Revision 4-16   **Mon Sep 9 2013**   **Dan Macpherson**
Minor changes to export explaination

Revision 4-15   **Sun Sep 8 2013**   **Dan Macpherson**
Adding External PG requirement for postgresql-pltcl

Revision 4-14   **Sun Sep 8 2013**   **Dan Macpherson**
Removing redundant ISS chapter files

Revision 4-13   **Fri Sep 6 2013**   **Dan Macpherson**
Added Database options on install.pl script for BZ#1004486

Revision 4-12   **Thu Aug 29 2013**   **Dan Macpherson**
First implementation of QE Review feedback

Revision 4-11   **Tue Aug 27 2013**   **Dan Macpherson**
Adding new Enhanced Entitlement Reporting instructions

Revision 4-10   **Wed Aug 21 2013**   **Athene Chan**
Minor grammatical errors edited in book.

Revision 4-9   **Tue Aug 20 2013**   **Athene Chan**
BZ#993494, 993495, 993496, 993497, 993498, 993499 - quality assurance feedback changes in documentation

Revision 4-8   **Sun Jul 28 2013**   **Dan Macpherson**
Minor change to Book_Info.xml

Revision 4-7   **Sun Jul 28 2013**   **Dan Macpherson**
Adding admonition for external Oracle databases

Revision 4-6   **Sun Jul 28 2013**   **Dan Macpherson**
Second implementation of tech review feedback

Revision 4-5   **Wed Jul 24 2013**   **Dan Macpherson**

Corrections for BZ#987245

Revision 4-4   Tue Jul 23 2013   **Dan Macpherson**
First implementation of tech review feedback

Revision 4-3   Fri Jul 19 2013   **Dan Macpherson**
Final beta updates

Revision 4-2   Fri Jul 12 2013   **Dan Macpherson**
Final beta updates

Revision 4-1   Thu Jul 11 2013   **Dan Macpherson**
Beta release creation

Revision 4-0   Fri Jul 5 2013   **Dan Macpherson**
New revision of guide for Red Hat Satellite 5.6

Revision 3-19   Wed Jan 2 2013   **Athene Chan**
BZ#874888 definition changed on figure 7.1 and 7.2

Revision 3-18   Thu Sept 27 2012   **Dan Macpherson**
Minor typo fixes

Revision 3-17   Wed Sept 19 2012   **Dan Macpherson**
Final packaging for 5.5

Revision 3-16   Thu Aug 22 2012   **Daniel Macpherson**
Minor addition to Troubleshooting chapter

Revision 3-15   Thu Aug 22 2012   **Daniel Macpherson**
Minor fix to table

Revision 3-14   Wed Aug 21 2012   **Daniel Macpherson**
Added Author Group and frontpage graphic

Revision 3-13   Tue Aug 21 2012   **Daniel Macpherson**
Final QE revisions
Redundant graphics and file cleaning

Revision 3-12   Tue Aug 21 2012   **Daniel Macpherson**
Final QE revisions

Revision 3-11   Tue Aug 21 2012   **Daniel Macpherson**
Revising screenshots

Revision 3-10   Tue Aug 21 2012   **Daniel Macpherson**
Minor edits to content

Revision 3-9   Tue Aug 21 2012   **Daniel Macpherson**
Minor edits to content

Revision 3-8   Mon Aug 20 2012   **Daniel Macpherson**
Added Upgrades chapter

Revision 3-7   Mon Aug 20 2012   **Daniel Macpherson**
Implemented feedback from QE review

Revision 3-6   Mon Aug 13 2012   **Daniel Macpherson**
   Revised graphics in Red Hat style

Revision 3-5   Mon Aug 13 2012   **Daniel Macpherson**
   BZ#847295 - Added feedback from technical review

Revision 3-4   Mon Aug 06 2012   **Daniel Macpherson**
   BZ#839503 - Warning note in Chapter 2.4 needs to mention not to subscribe to JBoss Channels
   BZ#812737 - RHN Satellite installation guide should explain that system has to be registered to be registered by RHN Classic way
   BZ#705164 - Not all applications use only TCP ports

Revision 3-2   Mon Aug 06 2012   **Daniel Macpherson**
   Book-wide revisions to all chapters

Revision 3-1   Wed Jul 11 2012   **Daniel Macpherson**
   Revisions to Introduction chapter

Revision 3-0   Tue May 22 2012   **Athene Chan**
   BZ#822704 - Updated package name "satellite-utils" to "spacewalk-utils", updated command from "satellite-hostname-rename" to "spacewalk-hostname-rename"
   BZ#783340 - Updated "s390x" to "IBM System z"

Revision 2-8   Wed Jan 4 2012   **Lana Brindley**
   BZ#719289 - Install instructions
   BZ#735539 - Updated Install using HTTP Proxy instructions
   BZ#739582 - Updated PAM instructions

Revision 2-7   Wed Jan 4 2012   **Lana Brindley**
   BZ#719289 - Install instructions
   BZ#632303 - Hardware Req's
   BZ#717165 - Layout error
   BZ#735539 - Updated Install using HTTP Proxy instructions
   BZ#736549 - Changed name of tools package
   BZ#738805 - Updated spacewalk report info in Troubleshooting chapter
   BZ#739582 - Updated PAM instructions
   BZ#767979 - Updated PAM instructions

Revision 2-6   Wed Oct 26 2011   **Lana Brindley**
   BZ#705164 - Additional Req's
   BZ#709100 - FAQs
   BZ#717165 - Layout error
   BZ#719289 - Add note to Install instructions
   BZ#735539 - Added extra setting to Install using HTTP Proxy instructions
   BZ#736549 - Changed name of tools package
   BZ#739582 - Updated PAM instructions

Revision 2-5   Mon Aug 15 2011   **Lana Brindley**
   Folded z-stream release into y-stream

Revision 2-4   Wed Jul 6 2011   **Lana Brindley**
   BZ#717165 - Added RHEL 6 references

Revision 2-3   Wed Jun 22 2011   **Lana Brindley**
   BZ#713550 - Added RHEL 6 references

Revision 2-2	**Wed Jun 15 2011**	**Lana Brindley**
Prepared for publication		

Revision 2-1	**Fri May 27 2011**	**Lana Brindley**
Updates from translators		

Revision 2-0	**Fri May 6 2011**	**Lana Brindley**
Prepared for translation		

Revision 1-36	**Tue May 3 2011**	**Lana Brindley**
BZ#701292 - Remove outdated section		

Revision 1-35	**Wed April 27 2011**	**Lana Brindley**
BZ#637809 - QE review		

Revision 1-34	**Wed April 13 2011**	**Lana Brindley**
BZ#695989 - Technical review		

Revision 1-33	**Tue Feb 8 2011**	**Lana Brindley**
Reorganised Troubleshooting chapter		

Revision 1-32	**Mon Feb 7 2011**	**Lana Brindley**
BZ#535468 - Maintenance		
BZ#663225 - Database Requirements		
BZ#671085 - Topologies		

Revision 1-31	**Mon Feb 7 2011**	**Lana Brindley**
BZ#637809 - Database Requirements		
Turned Troubleshooting chapter into Q&A set		
BZ#484689 - Troubleshooting		

Revision 1-30	**Mon Jan 31 2011**	**Lana Brindley**
BZ#462396 - Additional Requirements		
BZ#589375 - Installation		
BZ#591259 - Introduction		