



Red Hat Subscription Management All Subscription Docs

Using Red Hat Subscription Management

managing your Red Hat subscriptions, entitlements, and errata

Edition 1.0

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Abstract

Red Hat's Subscription Management tools and applications provide different ways to view system-level and organization-level notifications and statuses and to respond to changing subscription needs. This guide details the different reporting and notification mechanisms and some quick paths to remediating insufficient and expired subscriptions.

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CHAPTER 1. INTRODUCTION TO RED HAT SUBSCRIPTION MANAGEMENT

While Red Hat products are available through a GNU Public License, Red Hat supports its products through a subscription-based license. Support includes:

- Downloadable content and updates
- Access to the knowledge base
- Support for your product

You can view information about your product subscriptions through the [Customer Portal](#). Red Hat provides an organization-wide methods to track the software products and subscriptions deployed across an account.



Figure 1.1. Subscription Management Offerings

Red Hat Subscription Management (RHSM) allows administrators to know:

- Which products are available to your organization
- Which subscriptions and entitlements you have used
- Which products are installed on your systems

RHSM allows administrators to identify the relationship between their systems and the subscriptions used by those systems from two different perspectives:

- All active subscriptions for an account and which systems are consuming them
- All systems profiled within the inventory and which subscriptions they are consuming

RHSM can perform many of the tasks of the on-premise tools including:

- Registering systems
- Attaching and renewing subscriptions
- Retrieving system facts, contract information, and UUID



Figure 1.2. The Subscription Process

For large environments, highly-secure environments, and many other situations, a hosted arrangement is not feasible. Companies need a way to attach subscriptions and deliver software content locally. In that case, an organization entry with an on-premise subscription management application such as [Red Hat Satellite](#) is added to the inventory in RHSM. The list of attached subscriptions is defined in a manifest, which outlines all of the subscriptions, products, and content repositories for that organization. The subscription management application then directly manages all of the systems and units at its local site. This has performance benefits by lowering bandwidth, and it offers significant management benefits to administrators by allowing local and flexible control over subscription management.

Before you can register your systems with RHSM, you need an active subscription and available entitlements. Subscriptions can be purchased through the [Red Hat](#) Store or by contacting Sales directly. After purchasing, you may need to wait 10 minutes before the subscriptions show up in Customer Portal. After you successfully purchase the subscriptions you need to manage your Red Hat products and services, you register the subscriptions with RHSM. Finally, you attach individual subscriptions and entitlements to the systems that can use them.

CHAPTER 2. SYSTEM REGISTRATION

2.1. REGISTERING A SYSTEM WITH THE USER INTERFACE

Software delivery, support, and other services for Red Hat products are managed through a subscription service. A subscription service tracks systems and the subscriptions attached to those systems.

A system is recognized to the subscription service by being *registered* with the service. A subscription is associated or *attached* to a system.

Systems can be registered with a subscription service during the firstboot process or as part of the kickstart setup (both described in the *Installation Guide*). Systems can also be registered after they have been configured or removed from the subscription service inventory (unregistered) if they will no longer be managed within that subscription system.

Table 2.1. Frequently-Used subscription-manager Commands

Command	Description
Operational Commands	
register	Registers or identifies a new system to the subscription service.
unregister	Unregisters a machine, which strips its subscriptions and removes the machine from the subscription service.
attach	Assigns a specific subscription to the machine.
remove	Removes a specific subscription or all subscriptions from the machine.
redeem	Autosubscribes a machine to a pre-specified subscription that was purchased from a vendor, based on its hardware and BIOS information.
import	Manually installs a subscription certificate, rather than contacting the subscription service with a request and then receiving the certificate.
list	Lists all of the subscriptions that are compatible with a machine, either subscriptions that are actually consumed by the machine or unused subscriptions that are available to the machine.
Configuration Commands	

Command	Description
config	Modifies a specified configuration parameter in the configuration file, <code>/etc/rhsm/rhsm.conf</code> . The parameters are passed in the form <code>configuration_area.parameter="value"</code> .
service-level	Sets the service-level preference for the system to use when selecting subscriptions in autoattach operations.
release	Sets the operating system release version preference for the system to use when selecting subscriptions in autoattach operations.
refresh	Pulls the latest subscription data from the server. Normally, the system polls the subscription server at a set interval (4 hours by default) to check for any changes in the available subscriptions. The refresh command checks with the subscription server immediately, outside the normal interval.
clean	Removes all of the subscription and identity data from the local system, <i>without affecting the consumer information in the subscription service</i> . Any of the subscriptions consumed by the system are still consumed and are not available for other systems to use. The clean command is useful in cases where the local subscription information is corrupted or lost somehow, and the system will be reregistered using the register --consumerid=EXISTING_ID command.
Informative Commands	
version	Returns the version of the local client, the name of the subscription service the system is registered with, and the version of the subscription service.
identity	Handles the identity certificate and registration ID for a system. This command can be used to return the current UUID or generate a new identity certificate.
facts	Lists the system information, like the release version, number of CPUs, and other architecture information.

Command	Description
orgs, repos, environments	Lists all of the configured organizations, environments, and content repositories that are available to the given user account or system. These commands are used to view information in a multi-org infrastructure. They are not used to configure the local machine or multi-org infrastructure.

2.2. REGISTERING FROM THE COMMAND LINE

The simplest way to register a machine is to pass the **register** command with the user account information required to authenticate to Customer Portal Subscription Management. When the system is successfully authenticated, it echoes back the newly-assigned system inventory ID and the user account name which registered it.

The **register** options are listed in [Table 2.2, “register Options”](#).



NOTE

To use an on-premise subscription management application, first configure the client, and then run the **register** command.

Example 2.1. Registering a System to the Customer Portal

```
[root@server1 ~]# subscription-manager register --username admin-example
--password secret
```

```
The system has been registered with id: 7d133d55-876f-4f47-83eb-
0ee931cb0a97
```

Example 2.2. Automatically Attaching While Registering

The **register** command has an option, **--auto-attach**, which allows the system to be registered to the subscription service and immediately attaches the subscription which best matches the system's architecture, in a single step.

```
[root@server1 ~]# subscription-manager register --username admin-example
--password secret --auto-attach
```

This is the same behavior as when registering with the default settings in the Subscription Manager UI.

Table 2.2. register Options

Options	Description	Required
---------	-------------	----------

Options	Description	Required
<code>--username=<i>name</i></code>	Gives the content server user account name.	Required
<code>--password=<i>password</i></code>	Gives the password for the user account.	Required
<code>--serverurl=<i>hostname</i></code>	Gives the hostname of the subscription service to use. If this option is not used, the system is registered with Customer Portal Subscription Management.	Required for Red Hat Subscription Asset Manager
<code>--baseurl=<i>URL</i></code>	Gives the hostname of the content delivery server to use to receive updates. Both Customer Portal Subscription Management and SAM use Red Hat's hosted content delivery services, with the URL https://cdn.redhat.com . Since Red Hat Satellite hosts its own content, the URL must be used for systems registered with Red Hat Satellite.	Required for Red Hat Satellite
<code>--org=<i>name</i></code>	Gives the organization to which to join the system.	Required, except for hosted environments
<code>--environment=<i>name</i></code>	Registers the system to an environment within an organization.	OptionalGUI
<code>--name=<i>machine_name</i></code>	Sets the name of the system to register. This defaults to be the same as the hostname.	Optional
<code>--auto-attach</code>	Automatically attaches the best-matched compatible subscription. This is good for automated setup operations, since the system can be configured in a single step.	GUI Optional
<code>--activationkey=<i>key</i></code>	Attaches existing subscriptions as part of the registration process. The subscriptions are pre-assigned by a vendor or by a systems administrator using SAM.	Optional

Options	Description	Required
--servicelevel=None Standard Premium	Sets the service level to use for subscriptions on that machine. This is only used with the --auto-attach option.	Optional
--release=NUMBER	Sets the operating system minor release to use for subscriptions for the system. Products and updates are limited to that specific minor release version. This is used only used with the --auto-attach option.	Optional
--force	Registers the system even if it is already registered. Normally, any register operations will fail if the machine is already registered.	Optional
--type=TYPE	Sets what type of consumer is being registered. The default is <i>system</i> , which is applicable to both physical systems and virtual guests. Other types include <i>hypervisor</i> for virtual hosts, <i>person</i> , <i>domain</i> , <i>rhui</i> , and <i>candlepin</i> for some subscription management applications.	Optional

2.3. REGISTERING WITH A SUBSCRIPTION MANAGEMENT APPLICATION

By default, systems are registered against RHSM. The RHSM configuration must be updated to identify the alternate subscription service, and then the system can be registered as normal. This configuration can be updated manually or it can be automatically configured through a special RPM which is available with SAM.

The simplest way to register a system with a subscription management application:

1. SAM has an RPM which contains the required certificate and automatically updates the server configuration. Installing the RPM of the SAM configuration from the SAM server is the simplest way to create the proper configuration.

For example:

```
[root@server ~]# rpm -ivh http://sam.example.com/pub/candlepin-cert-consumer-latest.noarch.rpm
```

2.4. REGISTERING AN OFFLINE SYSTEM

Administrators may want to attach and track subscriptions for a system with limited connectivity or inconsistent access to the Internet. To register an offline or "air-gapped" system, you need to manually create a system profile using Red Hat Subscription Management (RHSM) in the Customer Portal. This profile serves as a placeholder and will not be connected to your actual system.

1. **Create a system profile:** From the [systems](#) page in RHSM, click the **New** button. Provide the required information to finish creating the new system profile.
2. **Attach subscriptions:** In your newly created system profile, click the Subscriptions tab, and attach any subscriptions you want to use with the system.
3. **Download and import the entitlement certificate(s):** From the **Subscriptions** tab on your system profile, click **Download Certificates** to download the entitlement certificate(s) for attached subscriptions. The downloaded file will be in zip format. Extract the content and in `/export/entitlement_certificates/` folder you will find the certificate `xyz.pem`. Move it to the client system's `/tmp` directory.

```
# subscription-manager import --
certificate=/tmp/Name_Of_Downloaded_Entitlement_Cert.pem
```



IMPORTANT

When you register an online system via `# subscription-manager register`, it automatically creates a connected profile on the Customer Portal, whereas in offline registration, you are manually creating a disconnected profile on the Portal.

After following this procedure, your system profile in the Customer Portal will show a subscription status "Unknown" and the command `# subscription-manager status` will output "Unknown."

2.5. UNREGISTERING A SYSTEM

The only thing required to unregister a machine is to run the `unregister` command. This removes the system's entry from the subscription service, removes any subscriptions, and, locally, deletes its identity and subscription certificates.

From the command line, this requires only the `unregister` command.

Example 2.3. Unregistering a System

```
[root@server1 ~]# subscription-manager unregister
```

To unregister from the Subscription Manager GUI:

1. Open the Subscription Manager UI.

```
[root@server ~]# subscription-manager-gui
```

2. Open the **System** menu, and select the **Unregister** item.
3. Confirm that the system should be unregistered.

2.6. RESTORING A REGISTRATION

There are times when the local registration and subscription information could be lost or corrupted. There could be a hardware failure or system crash. Or other IT considerations may require that a system be moved to a different machine. Whatever the reason, the local subscription configuration is lost.

A system can be registered against an existing system entry in the Red Hat subscription service, which essentially restores or reregisters that system. The reregister operation uses the original system ID with the registration request, so that all of the previous subscriptions associated with the system entry are restored along with the registration.

Reregistering a system uses the **register** command. This command passes the original UUID for a system to issue a request to the subscription service to receive a new certificate using the same UUID. This essentially renews its previous registration.

Example 2.4. Registering a System with an Existing Identity Certificate

The **register** command uses the original ID to identify itself to the subscription service and restore its previous subscriptions.

```
[root@server1 ~]# subscription-manager register --username admin-example
--password secret --consumerid=7d133d55-876f-4f47-83eb-0ee931cb0a97
```

Table 2.3. register Options to Reregister the System

Options	Description
<code>--consumerid</code>	Gives the system UUID used by an <i>existing</i> system. The system's entry must exist in the Red Hat subscription service for the reregister operation to succeed.
<code>--username=<i>name</i></code>	Gives the content server user account name.
<code>--password=<i>password</i></code>	Gives the password for the user account.

CHAPTER 3. SUBSCRIPTION USAGE

3.1. VIEWING AVAILABLE AND USED SUBSCRIPTIONS

To manage subscriptions, administrators need to know both what subscriptions are currently attached to a system and what subscriptions are available to the system. You can manage your usage from the Customer Portal from the [Subscription Utilization](#) page.

To manage subscriptions from the command line:

Table 3.1. subscription-manager list Options

Option	Description
--installed (or nothing)	Lists all of the installed products on the system. If no option is given with list , it is the same as using the --installed argument.
--consumed	Lists all of the subscriptions attached to the system.
--available [--all]	Using --available alone lists all of the compatible, active subscriptions for the system. Using --available --all lists all options, even ones not compatible with the system.
sect- Red_Hat_Subscription_Management- Using_Red_Hat_Subscription_Management- Registering_and_Attaching_Subscriptions_Section_-- ondate=YYYY-MM-DD	Shows subscriptions which are active and available on the specified date. This is only used with the --available option. If this is not used, then the command uses the current date.
--installed	Lists all of the products that are installed on the system (and whether they have a subscription) and it lists all of the product subscriptions which are attached to the system (and whether those products are installed).

The **list** command shows all of the subscriptions that are currently attached to the system by using the **--consumed** option.

```
[root@server1 ~]# subscription-manager list --consumed
```

```
+-----+
| Consumed Product Subscriptions |
+-----+
```

```

ProductName:      Red Hat Enterprise Linux Server
ContractNumber:   1458961
SerialNumber:     171286550006020205
Active:           True
Begins:           2009-01-01
Expires:          2011-12-31
```


The **list** command shows all of the subscriptions that are compatible with and available to the system using the **--available** option. To include every subscription the account has – both the ones that are compatible with the system and for other platforms – use the **--all** option with the **--available**. The **--ondate** option shows only subscriptions which are active on that date, based on their activation and expiry dates.

```
[root@server1 ~]# subscription-manager list --available --all
```

```
+-----+
| Available Subscriptions |
+-----+
```

```

ProductName:      RHEL for Physical Servers
ProductId:        MKT-rhel-server
PoolId:           ff8080812bc382e3012bc3845ca000cb
Quantity:         10
Expires:          2011-09-20

```

```

ProductName:      RHEL Workstation
ProductId:        MKT-rhel-workstation-mkt
PoolId:           5e09a31f95885cc4
Quantity:         10
Expires:          2011-09-20

```

```
[snip]
```

The **--installed** option correlates the products that are actually installed on the system (and their subscription status) and the products which could be installed on the system based on the attached subscriptions (and whether those products are installed).

```
[root@server1 ~]# subscription-manager list --installed
```

```
+-----+
| Installed Product Status |
+-----+
```

```

ProductName:      Red Hat Enterprise Linux
Status:           Not Subscribed
Expires:
Subscription:
ContractNumber:
AccountNumber:

```

```

ProductName:      Load Balancer
Status:           Subscribed
Expires:          2012-02-20
Subscription:     54129829316535230
ContractNumber:   39
AccountNumber:    12331131231

```

3.2. STOPPING PACKAGE LIST DATA COLLECTION

A system can be registered in three main ways:

- On the local system
- Through the Customer Portal, registered as an offline system
- To an on-premise service such as Red Hat Satellite

In all three cases, the registration process automatically begins creating and maintaining a package list for the given subscription service. Since package lists are a core aspect of subscription maintenance, this data collection cannot be suspended. If it is necessary to prevent data collection on the system, then remove the system from the subscription management service.

- Unregister the system.
- Unregister the system and delete the entry from the Customer Portal.
- Since package lists for systems registered in the portal are also stored in the portal subscription database, the entire system entry must be deleted for the information to be removed.
- Unregister the system from the on-premise subscription service,.

CHAPTER 4. USER PERMISSIONS

RHSM is only available if you have the appropriate user permissions. By default, all users are granted this permission, but it can be changed by administrators in the **User Management** area.

Organization Administrator: This is the highest permission level with full access to content and features. This is the only role that can manage users and control their access and permissions on an account. An account may have multiple organization administrators.

Manage Support Cases: User can view, create, and update support cases from the Support Cases page.

Download Software and Updates: You can download software and updates from the Red Hat Customer Portal.

Manage Your Subscriptions: You have access to subscription, utilization, and system information in Red Hat Subscription Management. There are three different levels for this permission:

- **View/Edit User's Only:** You can only view or edit systems that you have registered to the account.
- **View All:** You can view all systems associated with the account, but you cannot make any changes. This role is typical of someone such as a purchasing agent.
- **View/Edit All:** You can view and edit all systems and applications registered to the account.

Note: These permissions are only applicable to RHSM web. They do not block users from registering a system. For more information, speak with your TAM. Please also note that not all permissions that were available in RHN Hosted are currently available in RHSM.

4.1. CREATING A NEW USER IN RHSM

You may create new users in your organization to have different permissions if you are an organization administrator.

1. From the Customer Portal, click your name from the upper-right corner of the screen.
2. Click **User Management**.
3. Click **Add New User**.
4. Enter their contact and login information. At the bottom of the screen, select the aforementioned Customer Portal access permissions, as well as the **Organization Administrator** account role if applicable.
5. Click **Save**.

4.2. CHANGING USER PERMISSIONS IN RHSM

If the permissions a pre-existing user has need to be updated or are no longer appropriate, you can update them at any time.

1. From the Customer Portal, click your name from the upper-right corner of the screen.

2. Click **User Management**.
3. Select the user, and click **Edit**.
4. Click **Access Permissions**.
5. Make the appropriate changes to the permissions and account role, and click **Save**.

CHAPTER 5. ACTIVATING SUBSCRIPTIONS

When you purchase a subscription, you receive a 16-digit subscription number. You then enter that number in the Customer Portal to redeem the subscription.

1. From the Overview page, click **Activate your subscription**.
2. Enter the 16-digit subscription number.
3. Continue through the activation wizard.



Figure 5.1. RHSM Activation Key Wizard

CHAPTER 6. MANAGING ERRATA

Part of subscription management is tracking updates and new releases of software. Whenever an update is available – from a bug fix to a new release – a notification email can be sent to you. The notifications are only sent for registered systems which have subscriptions for that product attached to them. If there are no systems with attached subscriptions for that product, even if the account does have subscriptions for it, then no notification is sent.

Errata notifications are set as a preference for the user account, not for an individual system. When RHSM checks for potential errata updates, it checks the entire inventory, not specific systems.

An errata notification is sent if any registered system is affected, but the email does not list what systems are actually affected.

To configure errata notifications for a user account:

1. From the [Overview](#) page, click the account name.
2. Click **Account Settings**.
3. Click **Errata Notifications**.
4. Select the types of errata you want to receive. Security errata relate to critical security issues. Bug fixes and enhancement notifications relate to incremental updates to the product.
5. Select the notification frequency.
6. Click **Save**.

Notification control

Errata notification emails are **enabled** for your email address:
anbond@redhat.com

- ☒ Enable notifications for the selected errata types (select at least one)
 - ☐ Security updates
 - ☐ Bug Fix
 - ☐ Enhancement
- ☐ Disable all errata notifications

Notify me when

- ☐ Errata affects systems on my account (recommended)
Receive a notification when a package installed on a system on my organization's account is affected by errata. [More Info](#)
- ☒ Errata affects my subscriptions
Receive notification when a subscription is affected by errata.

Notification frequency

- ☒ Immediate
- ☐ Daily summary
- ☐ Weekly summary

SAVE[Cancel](#)

Figure 6.1. Errata Notification Settings in RHSM

CHAPTER 7. MANAGING SYSTEMS

Subscriptions are available to a system based on whether the software is compatible with the system's architecture. For example, there are different products and subscriptions for 32-bit and 64-bit platforms. Red Hat Subscription Management determines compatibility by collecting a range of facts about the system's hardware and architecture and then comparing it with all available subscriptions.

7.1. CHECKING SYSTEM FACTS

Updating the facts resends the information about the system to the Red Hat subscription service so that it can update the list of subscriptions which match the system architecture. Updating the facts is a recommended after hardware upgrades or other important system changes.

1. From the [Systems](#) page, click the appropriate system.
2. Click the **System Facts** tab.
3. System facts including the UUID, architecture, and memory display.

Details	Subscriptions	Errata	Installed Packages	System Facts
System Facts				
CPU		LSCPU		
core(s)_per_socket	8	architecture	x86_64	
cpu(s)	16	bogomips	4194.85	
cpu_socket(s)	1	byte_order	Little Endian	
nfo.common.address_sizes	46 bits physical, 48 bits virtual	core(s)_per_socket	8	
nfo.common.bogomips	4194.85	cpu(s)	16	
nfo.common.cache_alignment	64	cpu_family	6	

Figure 7.1. System Facts in RHSM

7.2. REGENERATING IDENTITY CERTIFICATES

Although credentials are not normally required with the identity command, using the `--force` option will require the username and password and will cause the Subscription Manager to prompt for the credentials if they are not passed in the command. This can be helpful if the identity certificate needs to be regenerated using a different Red Hat account than the original registration.

```
[root@server1 ~]# subscription-manager identity --regenerate --force
Username: jsmith@example.com
Password:
Identity certificate has been regenerated.
```

To download your certificate:

1. From the [Systems](#) page, click the appropriate system.
2. Click the **Subscriptions** tab.
3. Click **Download Certificates**.

7.3. ATTACHING A SUBSCRIPTION TO A SYSTEM

Subscription entitlements do not get used until they are attached to a system that needs it. Attaching a subscription is the next step after registration to RHSM.

1. From the [Systems](#) page, click the appropriate system.
2. Click the **Subscriptions** tab.
3. Click **Attach Subscriptions**.
4. Select the appropriate subscriptions, and click **Attach Subscriptions**.

Note: By default, all subscriptions attached to your account populate when you attach subscriptions. Selecting the **Only show subscriptions that match this subscription type** option can prevent you from attaching subscriptions that are not usable by the system.

7.4. REMOVING A SUBSCRIPTION FROM A SYSTEM

If a subscription has expired or you want to clear up an entitlement for another system, you can remove a subscription from a system manually.

1. From the [Systems](#) page, click the appropriate system.
2. Click the **Subscriptions** tab.
3. Click **Remove** next to the appropriate subscription.
4. Confirm the removal by clicking **Remove Subscription**.

Details Subscriptions Errata Installed Packages System Facts

Subscriptions attached to this system

Download Certificates Attach Subscriptions Run Auto-Attach

4 subscriptions attached

[90 Day Self-Supported Red Hat JBoss Enterprise Application Platform with Management Evaluation](#)

Service Level	Self-Support	REMOVE
SKU	MW0176371	
Contract	11292964	HOW TO RENEW
Dates	2017-02-09 - 2017-05-10	
Entitlements Consumed	1	

Figure 7.2. Remove Subscriptions in RHSM

7.5. REMOVING A SYSTEM

Removing a system from your account destroys it completely. You can no longer register or attach subscriptions to it, and it no longer receives applicable erratum notifications. Having systems that are no longer active on your account can cause backlog and lag issues when performing account-wide maintenance.

1. From the [Systems](#) page, click the appropriate system.
2. Click **Remove System**.

3. Click **Remove**. The system cannot be recovered after performing this action.

CHAPTER 8. USING MANIFESTS

When you purchase a subscription, you receive a 16-digit subscription number. You then enter that number in the Customer Portal to redeem the subscription.

- Specific details about a manifest including identity certificate and subscriptions allocated to it
- Manage the subscriptions allocated to the manifest

8.1. CREATING A NEW MANIFEST

1. From the manifests page, click **Create Manifest**.
2. Select the **Name** and subscription management application you use. Applications that are no longer supported are not available for new manifests.
3. Click **Create**.

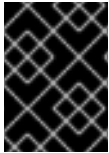
8.2. ADDING SUBSCRIPTIONS TO A MANIFEST

1. From the manifests page, click **Create Manifest**.
2. Select the subscriptions to move.
3. Click **Add Subscriptions**. You are taken to a new, dedicated page for adding subscriptions to a manifest.
4. If applicable, you can add subscriptions with future start dates (i.e., “future dating”).
5. If applicable, you can filter the table.
6. Select the number of subscriptions to move. Select the destination for the selected subscriptions.
7. Click **Submit**.

CHAPTER 9. MANAGING HYPERVISORS AND VIRTUAL HOSTS

9.1. HYPERVISORS IN RED HAT ENTERPRISE LINUX

Red Hat Enterprise Linux has an optional service available which can automatically detect guests on a virtual host system and register them as virtual systems. This allows subscriptions which are specific to virtual systems to be available to the guest and for subscriptions which are inherited from the host to be applied to the guest.



IMPORTANT

In Red Hat Subscription Management, there is no mapping or visual representation of the relationship between a hypervisor and its guests.

9.2. SUPPORTED HYPERVISORS

The `virt-who` process can detect and associate guests on several different types of hypervisors:

- Red Hat Enterprise Virtualization Manager (KVM)
- Xen
- HyperV
- VMware ESX

9.3. ABOUT HOST/GUEST ASSOCIATIONS

Subscription relationships have a lot of potential flexibility. Some subscriptions can be applied to a physical machine *or* to a certain number of virtual machines, while others can be applied to a physical host and then inherited by guests.

For subscriptions to be managed effectively, there has to be an internal awareness in the subscription service of the relationships between hosts and guests. This way, a subscription service can properly attach a single physical subscription to a physical host and then apply an included virtual subscription to its guest (for example), rather than consuming two physical subscriptions for each instance.

This association is done by extracting a *universally unique identifier* for each guest and associating it with its hypervisor. These UUIDs are part of the system facts for each virtual system.

The hypervisor is registered first with the subscription service, and then a related process on the system scans for any guests and submits the discovered UUIDs to the subscription service. This is done through the `libvirt` process when the `virt-who` command is run.

There are three factors that must be true for the subscription service to recognize the host/guest association and properly attach subscriptions:

- The appropriate virtual detection process must be run periodically to detect new guest instances.
- The hypervisor and the guest systems must be registered to the same subscription service.
- The hypervisor must have a subscription attached to it that includes virtual subscriptions or inheritable subscriptions.

9.4. SETTING UP A KVM OR XEN HYPERVISOR

1. Install the `virt-who` packages.

```
[root@server ~]# yum install virt-who
```

This creates a host list which establishes the guest/host mapping that RHSM and Red Hat Subscription Asset Manager can use for subscription management.

2. Then, create the entry in the Portal.
 1. Expand the **Subscriptions** tab, open the **Subscription Management** item, and select the **Units** item.
 2. Click the **Register** link at the top of the table.
 3. Fill in the name of the new hypervisor.
 4. Click the **Register** button.

9.5. SETTING UP A VMWARE HYPERVISOR



NOTE

The `virt-who` packages that create the host/guest mapping are available for RHEL. In a VMware environment, there must be a RHEL system available to run the `virt-who` process which connects to the VMware hypervisor.

1. Create the hypervisor entry in the Portal.
2. Expand the **Subscriptions** tab, open the **Subscription Management** item, and select the **Units** item.
3. Click the **Register** link at the top of the table.
4. Fill in the name of the new hypervisor.
5. Click the **Register** button.
6. Install the `virt-who` packages on the RHEL system.

```
[root@server ~]# yum install virt-who
```

7. Open the `virt-who` configuration file (`/etc/sysconfig/virt-who`) and set up the required information for the subscription services.
8. Enable ESX mode, and set the environment to **Library**:

```
VIRTWHO_ESX=1
VIRTWHO_ESX_ENV=Library
```

9. Specify the owner of the subscriptions. This must be the ID of an organization. For example:

—

```
VIRTWHO_ESX_OWNER=6340056
```

The organization ID should be available in the Portal entry for the organization if there are multiple organizations. If it was registered with the Portal (which has a single organization) or if another system is already registered to that organization, then the ID is available using the **subscription-manager orgs** command.

10. Set the hostname or IP address of the vCenter server:

```
VIRTWHO_ESX_SERVER=vcenter.example.com
```

11. Specify the username and password to use when connecting to the vCenter server:

```
VIRTWHO_ESX_USERNAME=admin  
VIRTWHO_ESX_PASSWORD=secret
```

12. Save the changes to the configuration file.

13. Start the **virt-who** service this begins gathering all of the host/guest data.

```
[root@vmware-server ~]# service virt-who start
```

14. The data are added to the **/var/lib/virt-who/hypervisor-systemid-UUID** file.

15. Use **chkconfig** to configure the **virt-who** service so that it starts automatically when the system starts.

```
[root@vmware-server ~]# chkconfig virt-who on
```

9.6. REGISTERING GUEST INSTANCES

Register a virtual system the same as a physical system.



NOTE

The **virt-who** process must be running on the virtual host or on a hypervisor in the environment (for VMware) to ensure that **virt-who** process maps the guest to a physical host, so the system is properly registered as a virtual system. Otherwise, the virtual instance will be treated as a physical instance.

9.7. ATTACHING SUBSCRIPTIONS TO VIRTUAL HOSTS AND GUESTS

Subscriptions, preferences, and autoattach settings for both virtual hosts and virtual guests are configured the same as for physical systems and other types of consumers.

There are two things to be aware of when using subscriptions in virtual environments.

Guests can inherit some subscriptions from their host. This means that it is not necessary to attach subscriptions to those systems for some products and that more products and content may be available to a system than what is directly attached to it.

The quantity of subscriptions required for a virtual guest is lower than for a physical machine. For

physical machines, subscriptions must cover the physical attributes of the machine, such as the number of sockets or cores. Subscriptions are always applied in sets of two to cover pairs of sockets or cores, and those subscription pairs must be attached to cover all sockets and cores. (For example, a four socket system requires two sets of two subscriptions).

However, for virtual guests, those physical attributes do not apply when counting subscriptions. Only a quantity of one is ever required to cover a virtual guest.

9.8. CREATING A DATA CENTER

There is a specific subscription available for data centers which registers a physical system as a hypervisor and then allows an unlimited number of virtual guests to be installed and registered on that system. That physical system can be a RHEL system running RHEV or Xen, or it can be a non-Linux system, running VMware or HyperV. The configuration does not matter as with running any virtualized environment, there simply must be one RHEL system to run the `virt-who` process to create the host/guest mapping.

For each physical host in the environment:

1. Set up the host or hypervisor.
2. Attach the data center subscription to the hypervisor entry. The name of the subscription is *RHEL for Virtual Datacenters ... System:Physical*.
3. Register all guests for that host/hypervisor.



NOTE

If a virtual instance is migrated from one hypervisor to another, the RHEL subscription is preserved, but any subscriptions for additional products, such as JBoss Enterprise Application Platform, must be released and then re-attached.

APPENDIX A. REVISION HISTORY

Revision 1.0-3 Fixed a typo	Mon July 3 2018	Anni Bond
Revision 1.0-2	Wed Jan 1 2018	Anni Bond
Revision 1.0-1 Initial creation by publican	Wed Apr 19 2017	Anni Bond