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## Katello 3.1 Installation

These instructions are for installing Katello 3.1, but the latest stable is [3.18](#).

Note: After installation of Katello, be sure to trust Katello's CA certificate on your system. This is required for the encrypted NoVNC connections. You will find `katello-default-ca.crt` in the `/pub` directory of your Katello server (e.g.

<http://katello.example.com/pub/katello-default-ca.crt> ).

## Hardware Requirements

Katello may be installed onto a baremetal host or on a virtual guest. The minimum requirements are:

- Two Logical CPUs
- 4 GB of memory (8 GB highly recommended)
- The filesystem holding `/var/lib/pulp` needs to be large, but may vary depending on how many different Operating Systems you wish to synchronize:
  - Allocate 30 GB of space for each operating system. Even though an operating system may not take up this much space now, this allows space for future updates that will be synchronized later.
- The filesystem holding `/var/lib/mongodb` needs at least 4 GB to install, but will vary depending on how many different Operating Systems you wish to synchronize:
  - Allocate around 40% of the capacity that has been given to the `/var/lib/pulp` filesystem
- The root filesystem needs at least 20 GB of Disk Space

## Required Ports

The following ports need to be open to external connections:

- 80 TCP - HTTP, used for provisioning purposes
- 443 TCP - HTTPS, used for web access and api communication
- 5647 TCP - qdrouterd - used for client and capsule actions
- 9090 TCP - HTTPS - used for communication with the smart proxy

## Production

Katello provides a puppet based installer for deploying production installations. Production installations are supported on the following OSes:

OS	
CentOS 6	X
CentOS 7	X
RHEL 6	X
RHEL 7	X

Katello can only run on an x86\_64 operating systems.

Installation may be done manually or via our recommended approach of using [forklift](#).

## Required Repositories

Select your Operating System:

```
yum -y --disablerepo="*" --enablerepo=rhel-6-server-rpms install yum-utils wget
yum-config-manager --disable "*"
yum-config-manager --enable rhel-6-server-rpms epel
yum-config-manager --enable rhel-6-server-optional-rpms
```

```
yum -y localinstall https://fedorapeople.org/groups/katello/releases/yum/3.1/katello/el6/x86_64/katello-repos-latest.rpm
yum -y localinstall https://yum.theforeman.org/releases/1.12/el6/x86_64/foreman-release.rpm
yum -y localinstall https://yum.puppetlabs.com/puppetlabs-release-el-6.noarch.rpm
yum -y localinstall https://dl.fedoraproject.org/pub/epel/epel-release-latest-6.noarch.rpm
yum -y install foreman-release-scl
```

## Installation

After setting up the appropriate repositories, install Katello:

```
yum -y install katello
```

At this point the `foreman-installer` should be available to setup the server. The installation may be customized, to see a list of options:

```
foreman-installer --scenario katello --help
```

#### Note

Prior to running the installer, the machine should be set up with a time service such as ntpd or chrony, since several Katello features will not function well if there is minor clock skew.

These may be set as command line options or in the answer file (/etc/foreman-installer/scenarios.d/katello-answers.yaml).  
Now run the options:

```
foreman-installer --scenario katello <options>
```

## Forklift

Foreman provides a git repository designed to streamline setup by setting up all the proper repositories. Forklift provides the ability to deploy a virtual machine instance via Vagrant or direct deployment on an already provisioned machine. For details on how to install using forklift, please see the [README](#).

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## Capsule Installation

## Hardware Requirements

The Capsule server is only supported on x86\_64 Operating Systems

- 2 Two Logical CPUs
- 4 GB of memory
- Disk space usage is similar to that of the main Katello server [Installation](#)

## Required Ports

At a minimum, the following ports need to be open to external connections for installation:

- 80 TCP - HTTP, used for provisioning purposes
- 443 TCP - HTTPS, used for web access and api communication
- 9090 TCP - HTTPS - used for communication with the smart proxy

See the [User Guide](#) for additional information about Capsule services and required ports.

## Installation

### Install needed packages:

The same yum repositories need to be configured on the Capsule server as the main Katello server. See the installation guide for the [list of required repositories](#).

Once you get the repositories configured, install the foreman-installer-katello package on the capsule

```
yum install -y foreman-installer-katello
```

### Generate Certificates for the Capsules

Prior to installing the Capsule, we need to generate certificates on the main **Katello** server:

```
capsule-certs-generate --capsule-fqdn "mycapsule.example.com" \
  --certs-tar "~/mycapsule.example.com-certs.tar"
```

In the above example, replace 'mycapsule.example.com' with your Capsule's fully qualified domain name. This will generate a tar file containing all the needed certificates. You will need to transfer those certificates to the server that you will install your Capsule on using whatever method you prefer (e.g. SCP).

The capsule-certs-generate command will output an example installation command. For example:

```
Installing      Done      [100%] [.....]
Success!

To finish the installation, follow these steps:

1. Ensure that the foreman-installer-katello package is installed on the system.
2. Copy ~/mycapsule.example.com-certs.tar to the system mycapsule.example.com
3. Run the following commands on the capsule (possibly with the customized
   parameters, see foreman-installer --scenario capsule --help and
   documentation for more info on setting up additional services):

yum -y localinstall http://katello.example.com/pub/katello-ca-consumer-latest.noarch.rpm
subscription-manager register --org "Default_Organization"
foreman-installer --scenario capsule
  --parent-fqdn "katello.example.com" \
  --register-in-foreman "true" \
  --foreman-base-url "https://katello.example.com" \
  --trusted-hosts "katello.example.com" \
  --trusted-hosts "mycapsule.example.com" \
  --oauth-consumer-key "UVrAZfMaCfBiiWejoUVLYCZHT2xhzuFV" \
  --oauth-consumer-secret "ZhH8p7M577ttNU3WmUGWASag3JeXXKgUX" \
  --pulp-oauth-secret "TPk42MYZ42nAE3rZvyLBh7Lxob3nEUi8" \
  --certs-tar "~/mycapsule.example.com-certs.tar"

The full log is at /var/log/capsule-certs-generate.log
```

### Install Capsule

Use the provide installation command from `capsule-certs-generate`, and tailor for your own purposes as needed. The defaults will give you a Capsule ready for Content-related services.

See the [User Guide](#) to learn about setting up provisioning related services, as well as the [Foreman manual](#)

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## Client Installation

Client machines can be added in one of two ways: manually or via a provisioned host.

### Manual

Install the appropriate Katello client release packages. For CentOS 6, you will also need to enable the COPR repository for subscription-manager.

Select your Operating System:

```
yum install -y https://fedorapeople.org/groups/katello/releases/yum/3.1/client/el5/x86_64/katello-client-repos-latest.rpm  
yum -y install https://dl.fedoraproject.org/pub/epel/epel-release-latest-5.noarch.rpm
```

Now you are ready to install the katello-agent:

```
yum install katello-agent
```

## Provisioned

In order to install the katello-agent package on a host you are provisioning, you will need to make the appropriate client repository available within your Katello. The first step is to either create a new product or add to an existing product, the appropriate client repository from the dropdown in the [manual](#) section above. After you create the new repositories, they will need to be synced locally. Next, you will then need to add them to the relevant content view(s) for the hosts you are wanting to provision. At this point, a new version of the content view can be published and promoted to the appropriate environments that you are wanting to provision a host into. At this point, you can go provision a host and the host will install the katello-agent package during setup.

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## Katello Upgrade

Katello supports upgrades from version 2.0. For users transitioning from 1.4, please see - [Transition Guide](#).

## Pre-upgrade considerations

Before you upgrade, you need to run the upgrade check script that will check for any active tasks, your version of Katello, and if there are any content hosts that will be deleted (see below). This script is included in Katello 2.4.3.

To run the script:

```
foreman-rake katello:upgrade_check
```

In addition to the information on the screen, the command will print the number of Content Hosts that will be deleted upon upgrade and will generate a csv with the full list including the uuid, name, last checkin date, and a reason for their deletion.

## Content Hosts

Katello 3.0 unifies Host and Content Host objects to provide a more unified experience. As a result, it is no longer allowed to have more than one Content Host with the same FQDN. This matches the requirement that is already imposed on the Foreman Host object. Upon upgrade to Katello 3.0 any Hosts that violate one of three rules will be deleted:

- More than one Content Host cannot exist with the same FQDN (all but the most recently registered will be deleted upon upgrade)
- Content Hosts must have a reported FQDN
- If a Host and a Content Host exist with the same FQDN, they must be within the same Organization.

This report is automatically run as part of the `katello:upgrade_check` script. However, if you want to get just the content host info, you can run:

```
foreman-rake katello:preupgrade_content_host_check
```

## Step 1 - Backup

If Katello is running on a Virtual Machine, we recommend to take a snapshot prior to upgrading. Otherwise, take a backup of the relevant databases by following the [instructions here](#).

## Step 2 - Operating System

Ensure your operating system is fully up-to-date:

```
yum -y update
```

**NOTE:** If kernel packages are updated here (e.g. upgrading el 6.6 to 6.7), you must reboot and ensure the new kernel and SELinux policy is loaded before upgrading Katello.

## Step 3 - Repositories

Update the Foreman and Katello release packages:

- RHEL6 / CentOS 6:

```
yum update -y https://fedorapeople.org/groups/katello/releases/yum/3.1/katello/el6/x86_64/katello-repos-latest.rpm  
yum update -y https://yum.theforeman.org/releases/1.12/el6/x86_64/foreman-release.rpm
```

- RHEL7 / CentOS 7:

```
yum update -y https://fedorapeople.org/groups/katello/releases/yum/3.1/katello/el7/x86_64/katello-repos-latest.rpm  
yum update -y https://yum.theforeman.org/releases/1.12/el7/x86_64/foreman-release.rpm
```

## Step 4 - Update Packages

Clean the yum cache

```
yum clean all
```

Update the required packages:

```
yum -y update
```

## Step 5 - Run Installer

The installer with the `-upgrade` flag will run the right database migrations for all component services, as well as adjusting the configuration to reflect what's new in Katello 3.1

```
foreman-installer --scenario katello --upgrade
```

Congratulations! You have now successfully upgraded your Katello to 3.1 For a rundown of what was added, please see [release notes](#)!

If for any reason, the above steps failed, please review `/var/log/foreman-installer/katello.log` – if any of the “Upgrade step” tasks failed, you may try to run them manually below to aid in troubleshooting.

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## Capsule Upgrade

### Step 1 - Operating System

Ensure your operating system is fully up-to-date:

```
yum -y update
```

**NOTE:** If kernel packages are updated here (e.g. upgrading el 6.6 to 6.7), you must reboot and ensure the new kernel and SELinux policy is loaded before upgrading Katello.

## Step 2 - Repositories

Update the Foreman and Katello release packages:

- RHEL6 / CentOS 6:

```
yum update -y https://fedorapeople.org/groups/katello/releases/yum/3.1/katello/el6/x86_64/katello-repos-latest.rpm  
yum update -y https://yum.theforeman.org/releases/1.12/el6/x86_64/foreman-release.rpm
```

- RHEL7 / CentOS 7:

```
yum update -y https://fedorapeople.org/groups/katello/releases/yum/3.1/katello/el7/x86_64/katello-repos-latest.rpm  
yum update -y https://yum.theforeman.org/releases/1.12/el7/x86_64/foreman-release.rpm
```

## Step 3 - Update Packages

Clean the yum cache

```
yum clean all
```

Update packages:

```
yum update -y
```

## Step 4 - Regenerate Certificates

On the Katello server, regenerate the certificates tarball for your capsule:

```
capsule-certs-generate --capsule-fqdn "mycapsule.example.com"\  
--certs-tar "~/mycapsule.example.com-certs.tar"
```

And copy them to your capsule:

```
scp ~/mycapsule.example.com-certs.tar mycapsule.example.com:
```

## Step 5 - Run Installer

The installer with the `-upgrade` flag will run the right database migrations for all component services, as well as adjusting the configuration to reflect what's new in Katello 3.1

```
foreman-installer --scenario capsule --upgrade\  
--certs-tar ~/mycapsule.example.com-certs.tar\  
--certs-update-all --regenerate --deploy
```

**Congratulations!** You have now successfully upgraded your Capsule to 3.1 For a rundown of what was added, please see [release notes](#)!

If for any reason, the above steps failed, please review `/var/log/foreman-installer/capsule.log` – if any of the “Upgrade step” tasks failed, you may try to run them manually below to aid in troubleshooting.

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## Client Upgrade

When upgrading clients there are 2 scenarios: manually added clients and provisioned clients.

### Step 1 - Update Repositories

## Manually Added Clients

Update the Katello client release packages:

Select your Operating System:

```
yum update -y https://fedorapeople.org/groups/katello/releases/yum/3.1/client/RHEL/5Server/x86_64/katello-client-repos-latest.rpm  
yum -y install https://dl.fedoraproject.org/pub/epel/epel-release-latest-5.noarch.rpm
```

## Provisioned Clients

If the katello-agent was setup during provisioning from a locally synced repository then you will need to go through some [initial setup](#) to add the 3.1 client repositories to your Katello for each version needed. After you create the new repositories, they will then need to be added to the relevant content view(s) and the older versions removed. At this point, a new version of the content view can be published and promoted to the appropriate environments. Once the new package is available the clients can be updated following the next steps.

## Step 2: Update Packages

Clean the yum cache

```
yum clean all
```

Update packages:

```
yum update katello-agent
```

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## Katello 3.1 (California Common) Release Notes

### Features

### Tooling

- Have the katello service script handle pulp\_streamer and squid ([#15484](#), [7ce677fe](#))

## Installer

- Make migration generation easier ([#15205](#), [2af541b4](#))
- Provide a Rake command to setup a local set of modules similar to how the RPM is built ( [#14334](#), [ada4a4f2](#))

## CLI

- Upgrade to rubocop 0.39 ([#15029](#), [36439787](#))

## Tests

- Run rubocop on rake files ([#15004](#), [7e1ce1b8](#))

## foreman-debug

- Do not collect squid logs when called from sosreport ( [#14608](#), [32f4434b](#))

## API

- migrate Release version to host subscriptions controller ([#13903](#), [536c81e3](#))

## Repositories

- Running Sync status to contain a direct link to sync tasks ( [#10315](#), [c7746d63](#))

## Other

- Add the bin directory and rails script to katello ([#15035](#), [2d5b1b8e](#))
- Support rubocop 0.39.0 ([#14950](#), [bd547d2d](#), [97f83ee6](#), [5e9b7a60](#), [f940aab0](#), [36c185c5](#))
- Update Katello to use Task Groups ([#13566](#), [f803b183](#))

## Bug Fixes

### Web UI

- Sync Status page not drawn properly if sync in progress ( [#15499](#), [43ddadae](#))
- Duplicate key on "katello\_content\_facet\_errata\_eid\_caidd" under load ([#15407](#), [fa3f1fa3](#))
- Available pool quantity is wrong after removed subscribed pool(by virt-who) ([#15394](#), [e2875646](#))
- "Reset Puppet Environment to match selected Content View" does not work ( [#15295](#), [525a381b](#))
- The page does not load while accessing Content -> "Gpg Keys" when having Any Context set ( [#15221](#), [16d3a1cb](#))
- Unnecessary date/time transformation for sync plan start date ( [#15180](#), [0baa312f](#))
- Subscription table has mismatched row colors when there are an odd number of subscriptions under one name ([#11871](#), [5a4af062](#))

### CLI

- content view filter cannot be created ([#15395](#), [3b381817](#))
- 'hammer sync-plan info' doesn't return start date ([#15204](#), [59b43952](#))
- Unable to remove host collection from activation key via hammer ( [#15162](#), [bb736223](#))
- Some tests in hammer-cli-katello use MiniTest's assert() method improperly ([#15142](#), [27fe17d0](#))
- Repository list test references nonexistent option ([#15032](#), [aa6f1757](#))
- (bats fail) hammer repository upload\_content missing -organization param ( [#15013](#), [e8c714b8](#))
- hammer-cli-katello: 'capsule content synchronize' generates error with 'name' input ([#14871](#), [a167e20e](#))
- hammer host errata apply async - always displays success ( [#14860](#), [8fbe49ee](#))
- hammer capsule content synchronization needs -help to indicate which fields are required and/or optional ( [#14656](#))
- hammer activation-key -unlimited-content-hosts flag is confusing ([#14333](#), [fb494a72](#))

## Installer

- katello install failing due to passenger error ([#15393](#), [56adbf64](#), [55154c9a](#))
- The `try` method is used in katello-installer, but it only exists in Rails, not Ruby ( [#15327](#), [41df3788](#))
- There is no nil check for missing kafo params 'capsule\_certs' and 'parent\_fqdn' ( [#15325](#), [0aa56393](#))
- Capsule upgrade 6.1->6.2 snap 13 incorrectly resets trusted hosts and foreman-url ( [#15315](#), [b2322b35](#))
- Make proxy.rb executable ([#15309](#), [cee964f1](#))

- Remove unused sam-installer ([#15208, 4cfddef7](#))
- Set Client SSL certs via parameters ([#15063, fe37561e](#))
- capsule-certs-generate does not honour “-parent-fqdn” parameter ([#14978, 3df90771](#))
- Have Katello-installer check to see if there is a proxy env set before running ([#14956, af52c83c](#))
- deploy candlepin url using fqdn ([#14617, f18f34db](#))
- [RFE] katello-installer should include -capsule-tftp true by default ([#13546](#))
- Katello 3.0 RC5 Upgrade fail ([#15269, b5f07391](#))

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- distinct used when finding applicable errata, causing severe slowdowns on dashboard ([#15253, 4667141b](#))

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- Duplicate entries for hypervisors after renaming content host ([#15197, 78bb525a](#))
- Content hosts licensing status is hard to determine from dot colors ([#14992, bf97d409](#))
- Enable feature to update all packages for a host collection to patch all hosts at once ([#14940, f85fc0dc](#))
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- webUI, Subscription Status shows green instead of red if registered system without auto-attach. ([#15209, c621ef28](#))
- removing a vdc subscription causes candlepin listener to fail as the guest subs are removed too ([#15207, a89f1f0c](#))
- content host installed\_products array needs to pass product arch and version to candlepin when specified ([#14593, 20efbb2e](#))
- dynflow\_executor memory usage continues to grow, causing performance degradation ([#12650, 7f661597](#))
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- Organization show api broken ([#15185, 77e1ab61](#))
- Adding puppet module to Content View by API does not set version, and therefore exclude it in publishing the module ([#15177, 849f26b6](#))
- Api request fails for GET /katello/api/organizations/:organization\_id/environments/:id/repositories ([#15159, 195b9a69](#))
- PUT /api/v2/host\_collections/ do not return 'host\_ids' attribute ([#15486, 15c1a2eb](#))
- Unable to add puppet module stdlib to my content view through the UI ([#15435, 11a5a536](#))

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- Document facet attributes for hosts ([#15165, 29f42a35](#))

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- capsule-remove doesn't remove foreman-installer configs and old certs which causes failure of next capsule install ([#14906, 2f31c5f9](#))
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- “Content Host Counts” column on the Errata page should only count hosts in the current org ([#14933, 1bddf751](#))

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- [foreman-debug] collect /etc/qpid-dispatch/qdrouterd.conf ([#14881](#), [b73086c2](#))

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- product API call with 'enabled=true' slow, causing product page to load slowly ([#14259](#), [98e9acf6](#))

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- list of packages on About page missing crucial entries ([#15242](#), [1ade0806](#))
- REST Timeout during manifest import ([#15170](#), [022e3d86](#))
- Remove old broken script files ([#15034](#), [ebf96ef2](#))
- Errant single quote in apidoc for repository create param checksum ([#14975](#), [0879c327](#))
- Nightly fails with undefined method 'value' for module ([#14973](#), [e19e50ab](#))
- Docs links in the contributing markdown file are broken ([#14972](#), [34bfd757](#))
- Uploaded puppet modules from hammer CLI not visible in the UI ([#14949](#), [4730c9d2](#))
- CDN url is allowed to be "https", which only works for one hostname ([#14916](#), [850a07fe](#))
- foreman proxy still running on port 8000 needlessly. ([#14750](#), [01635aa2](#))
- update of subscription facet triggers a second call to dynflow ([#14709](#), [77b7b555](#))
- extracting strings is not working due to humanized names ([#14610](#), [42c1152d](#))
- hammer ping prompts for admin password ([#14397](#))
- Katello's late initialization causes issues when resuming dynflow tasks ([#15114](#), [28cb3ef5](#))

## Contributors

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## Hammer

### What is the CLI?

The Hammer CLI provides users with a command-line interface for interacting with Katello. It's our goal to make all functionality that's accessible through Katello's Web UI also available through Hammer so that users may use Hammer for their

entire Katello workflow.

## Installation

The first step to install the CLI is to setup the appropriate repositories: foreman, katello and epel.

Select your Operating System:

```
yum -y --disablerepo="*" --enablerepo=rhel-6-server-rpms install yum-utils wget  
yum-config-manager --disable "*"   
yum-config-manager --enable rhel-6-server-rpms epel  
yum-config-manager --enable rhel-6-server-optional-rpms
```

```
yum -y localinstall https://fedorapeople.org/groups/katello/releases/yum/3.1/katello/el6/x86_64/katello-repos-latest.rpm  
yum -y localinstall https://yum.theforeman.org/releases/1.12/el6/x86_64/foreman-release.rpm  
yum -y localinstall https://dl.fedoraproject.org/pub/epel/epel-release-latest-6.noarch.rpm
```

After setting up the appropriate repositories, install Katello:

```
yum -y install rubygem-hammer_cli_katello
```

## How do I use Hammer?

To get started with hammer, view the help:

```
hammer -u <user> -p <password> --help
```

## How do I contribute to Hammer?

See the [Katello Hammer CLI project](#) if you want to get setup for contributing to the hammer code.

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## Activation Keys

Activation Keys provide a mechanism to define properties that may be applied to Content Hosts during registration. This includes properties such as:

- Lifecycle Environment
- Content View

- Subscriptions
- Repository Enablement
- Host Collections

## Definitions

- [Content Host](#)
- Host Collection - A statically defined group of Content Hosts.
- Subscription - The right to receive the associated content from Katello.

## General Features

The following is a high-level summary of the Activation Key features:

- [Create an Activation Key](#)
- [Add subscriptions to an Activation Key](#)
- [Change repository enablement for an Activation Key](#)
- [Add Host Collections to an Activation Key](#)
- [Register a Content Host using an Activation Key](#)

## Create an Activation Key

To create a new key,

- navigate to: Content > Activation Keys
- click **New Activation Key**

The screenshot shows the Foreman web interface for creating a new activation key. The top navigation bar includes the Foreman logo, the current organization 'Default\_Organization', and various menu items like Monitor, Content, Hosts, Configure, Infrastructure, and Administer. The user is logged in as 'Admin User'. The main content area is titled 'Activation Keys' and shows a search bar and a '+ New Activation Key' button. The 'New Activation Key' form is open, displaying the following fields:

- Name\***: A text input field containing 'research'.
- Content Host Limit**: A dropdown menu with 'Unlimited Content Hosts:
- Description**: A text area containing 'This is the activation key used by the research department.'
- Environment**: A horizontal selection bar with three options: 'Library' (selected), 'dev', and 'test'.
- Content View**: A dropdown menu with 'Default Organization View' selected.

At the bottom of the form are 'Cancel' and 'Save' buttons. A 'Close' button is also visible in the top right corner of the form window.

- **Name:** This required option is used to identify the activation key to command line tools, such as *subscription-manager*.
- **Content Host Limit:** This option will control how many Content Hosts may be registered using the key. An “unlimited” value will not place any limits on usage. Specifying a quantity will limit the number of registered content hosts. Registering with an activation key consumes one of the available limit quantity, while unregistering makes it available again. (i.e. this quantity is not a usage counter but a limit of actively registered content hosts)
- **Description:** A free form text field that can be used to store a description of the key for later reference or for pseudo-tagging that can be used to search.



- *Environment* and *Content View*: Although optional, at least one activation key used during registration must specify a content view. Activation keys are used in the order specified to *subscription-manager* meaning the last activation key with a content view takes precedence.

The following example would use CV\_B's content view:

```
subscription-manager register --org Default_Organization --activationkey NO_CV --activationkey CV_A --activationkey CV_B
```

Or equivalently:

```
subscription-manager register --org Default_Organization --activationkey NO_CV,CV_A,CV_B
```

For registration to succeed, at least one activation key must be successfully applied. For an activation key to succeed, at least one of the listed subscriptions must be successfully attached to the registering content host.

## Add Subscriptions to an Activation Key

To add subscriptions to a key:

- navigate to: Content > Activation Keys
- select the desired key from the list
- click **Subscriptions**
- click **Add**
- select the Subscriptions you would like to add
- click **Add Selected**

The **Auto-Attach** setting controls how the group of subscriptions are processed during registration.

When 'Auto-Attach' is enabled but no subscriptions are added to the activation key, subscriptions will be automatically added to cover the installed products. This is equivalent to passing the '-auto-attach' flag to the subscription-manager command:

```
subscription-manager register --org=Default_Organization --auto-attach
```

When 'Auto-Attach' is enabled and subscriptions are listed for the activation key, two things will happen. First all subscriptions for custom products will be attached to the registering content host. Second, the group of Red Hat subscriptions will be attached as needed to cover the content host's installed Red Hat products. This is most commonly used when there is a group of similar subscriptions (eg. several Red Hat Enterprise Linux from different contracts, or guest subscriptions from different hypervisors) and which one used is not important. Katello's subscription tooling, [Candlepin](#), will automatically choose the minimal proper subscriptions from the group.

Finally, when 'Auto-Attach' is disabled, all subscriptions on the activation key will attached to the registering content host, regardless of whether needed to cover an installed product or not. For example, adding an OpenStack Platform subscription would then allow that product to be installed after registration.

**FOREMAN** Admin User

Default Organization Monitor Content Containers Hosts Configure Infrastructure Administrator

## Activation Keys

Search... Showing 1 of 1 (1 Total) 0 Selected [+ New Activation Key](#)

Name  
research >

### Activation Key: research

Remove Copy Activation Key Close

Details Subscriptions Product Content Host Collections Associations

Activation Key Type:  
**Auto-Attach** Yes

*When Auto Attach is enabled, registering systems will be attached to all associated custom products and only associated Red Hat subscriptions required to satisfy the system's installed products.*

List/Remove Add

Search... Showing 1 of 1 (1 Total) Subscriptions 0 Selected Remove Selected

Quantity	Attached	Type	Starts	Expires	Support Level	Contract	Account
Red Hat Enterprise Linux Server, Premium (8 sockets) (Up to 4 guests)							
1	0 out of 25	Physical	12/31/14	12/31/15			5481114

## Change Repository Enablement for an Activation Key

To change repository enablement settings using a key:

- navigate to: Content > Activation Keys
- select the desired key from the list
- click **Product Content**
- click the edit icon for the repository content set that you would like to modify
- select the desired value (e.g. 'Override to Yes', 'Override to No', 'Defaults to Yes', 'Defaults to No')
- click **Save**

View current settings:

**FOREMAN** Admin User

Default\_Organization Monitor Content Hosts Configure Infrastructure Administrator

## Activation Keys

Search... Showing 1 of 1 (1 Total) 0 Selected | Deselect All [+ New Activation Key](#)

**Name**

research >

### Activation Key: research

Remove Close

Details Subscriptions Product Content Host Collections

Below are the repository content sets currently available for this activation key through its subscriptions. For Red Hat subscriptions, additional content can be made available through the [Red Hat Repositories page](#). Changing default settings for content hosts that register with this activation key requires subscription-manager version 1.10 or newer to be installed on that host.

**RHEL 6**

Content

Enabled by Default Defaults to Yes

Change current settings:

**FOREMAN** Admin User

Default\_Organization Monitor Content Hosts Configure Infrastructure Administrator

## Activation Keys

Search... Showing 1 of 1 (1 Total) 0 Selected | Deselect All [+ New Activation Key](#)

**Name**

research >

### Activation Key: research

Remove Close

Details Subscriptions Product Content Host Collections

Below are the repository content sets currently available for this activation key through its subscriptions. For Red Hat subscriptions, additional content can be made available through the [Red Hat Repositories page](#). Changing default settings for content hosts that register with this activation key requires subscription-manager version 1.10 or newer to be installed on that host.

**RHEL 6**

Content

Enabled by Default

[Save](#) [Cancel](#)

Add Host Collections to an Activation Key

To add Host Collections to a key:

- navigate to: Content > Activation Keys
- select the desired key from the list
- click **Host Collections**
- click **Add**
- select the Host Collections you would like to add
- click **Add Selected**

FOREMAN Admin User

Default\_Organization Monitor Content Hosts Configure Infrastructure Administrator

## Activation Keys

Search... Showing 1 of 1 (1 Total) 0 Selected | Deselect All + New Activation Key

Name

research >

### Activation Key: research

Remove Close

Details Subscriptions Product Content Host Collections

Host Collection Management

List/Remove Add

Filter 2 Selected | Deselect All Add Selected

<input type="checkbox"/>	Name	Description	Capacity
<input checked="" type="checkbox"/>	development		0 / Unlimited
<input type="checkbox"/>	finance		0 / Unlimited
<input checked="" type="checkbox"/>	research		0 / Unlimited

## Register a Content Host using an Activation Key

The simplest form of registering a content host with an activation key is this:

```
subscription-manager register --org=Default_Organization --activationkey=$KEY_NAME
```

[Click here for more information](#)

Note that modifying an activation key does not change anything on content hosts previously registered with the key.

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## Backup

In the following sections, these assumptions are being made with respect to making the backup:

- `/tmp/backup` will be used as the target for backups
- All commands are executed as `root`

## Option One: Offline repositories backup

By default, the whole Katello instance will be turned off completely for the entire backup.

```
# katello-backup /tmp/backup
```

## Option Two: Online repositories backup

Backing up the repositories can take an extensive amount of time. You can perform a backup while online. In order for this procedure to succeed, you must not change or update the repositories database until the backup procedure is complete. Thus, you must avoid publishing, adding, or deleting content views, promoting content view versions, adding, changing, or deleting sync-plans, and adding, deleting, or syncing repositories during this time. To perform an online-backup of the repositories, run:

```
# katello-backup --online-backup /tmp/backup
```

## Option Three: Skip repositories backup

There may be situations in which you want to see a system without its repository information. You can skip backing up the Pulp database with the following option:

```
# katello-backup --skip-pulp /tmp/backup
```

Please note you would not be able to restore a Katello instance from a directory where the Pulp database was skipped.

## Final check-up

After a successful backup, the backup directory should have the following files:

```
# ls /tmp/backup
config_files.tar.gz
mongo_data.tar.gz
pgsql_data.tar.gz
```

Additionally, if you ran the backup without skipping the Pulp database, you will see the additional file:

```
pulp_data.tar
```

Katello instance should be up and running. Next chapter is dedicated to restoring a backup.

## Restore

All the following commands are executed under `root` system account.

Please note only backups that include the Pulp database can be restored. To verify that your backup directory is usable, make sure it has the following files:

```
# ls /tmp/backup
config_files.tar.gz
mongo_data.tar.gz
pgsql_data.tar.gz
pulp_data.tar
```

Once verified, simply run:

```
# katello-restore /tmp/backup
```

This command will require verification in order to proceed, as the method will destruct all databases before restoring them. Once the procedure is finished, all processes will be online, and all databases and system configuration will be reverted to the state and the time of the backup.

Check log files for errors, such as `/var/log/foreman/production.log` and `/var/log/messages`.

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## Capsules

### What are Capsules?

The Capsule server is a Katello component that provides federated services to discover, provision, control, and configure hosts. Each Katello server includes a Default Capsule, and you may deploy additional Capsules to remote data centers. A Capsule



server provides the following features:

- Content features, including:
  - Repository synchronization
  - Content delivery
  - Host action delivery (package installation updates, etc)
  - Subscription management proxy (RHSM)
- Foreman Smart Proxy features, including:
  - DHCP, including ISC DHCP servers
  - DNS, including Bind and MS DNS servers
  - Realm, including FreeIPA
  - Any UNIX-based TFTP server
  - Puppet Master servers
  - Puppet CA to manage certificate signing and cleaning
  - Baseboard Management Controller (BMC) for power management
  - Provisioning template proxy

The Katello Capsule server is a means to scale out the Katello installation. Organizations can create various capsules in different geographical locations. These are centrally managed through the Katello server. When a Katello user promotes content to a particular environment, the Katello server will push the content to each of the Capsule servers subscribed to that environment. Hosts pull content and configuration from the Katello Capsule servers in their location and not from the central server.

In a fully configured capsule, communication is completely isolated between hosts and the Katello server.

## How do Capsules differ from Smart Proxies?

A Katello Capsule is a Foreman Smart Proxy with the addition of content-related services.

## Deployment

In the simplest use case, a user may only want to use the Default Capsule. Larger deployments would have a single Katello server with multiple Capsules attached, with these remote Capsules deployed to various datacenters. Capsules can also be used to scale the number of hosts attached to a single Katello server.

## Installation

See [Capsule Installation](#)

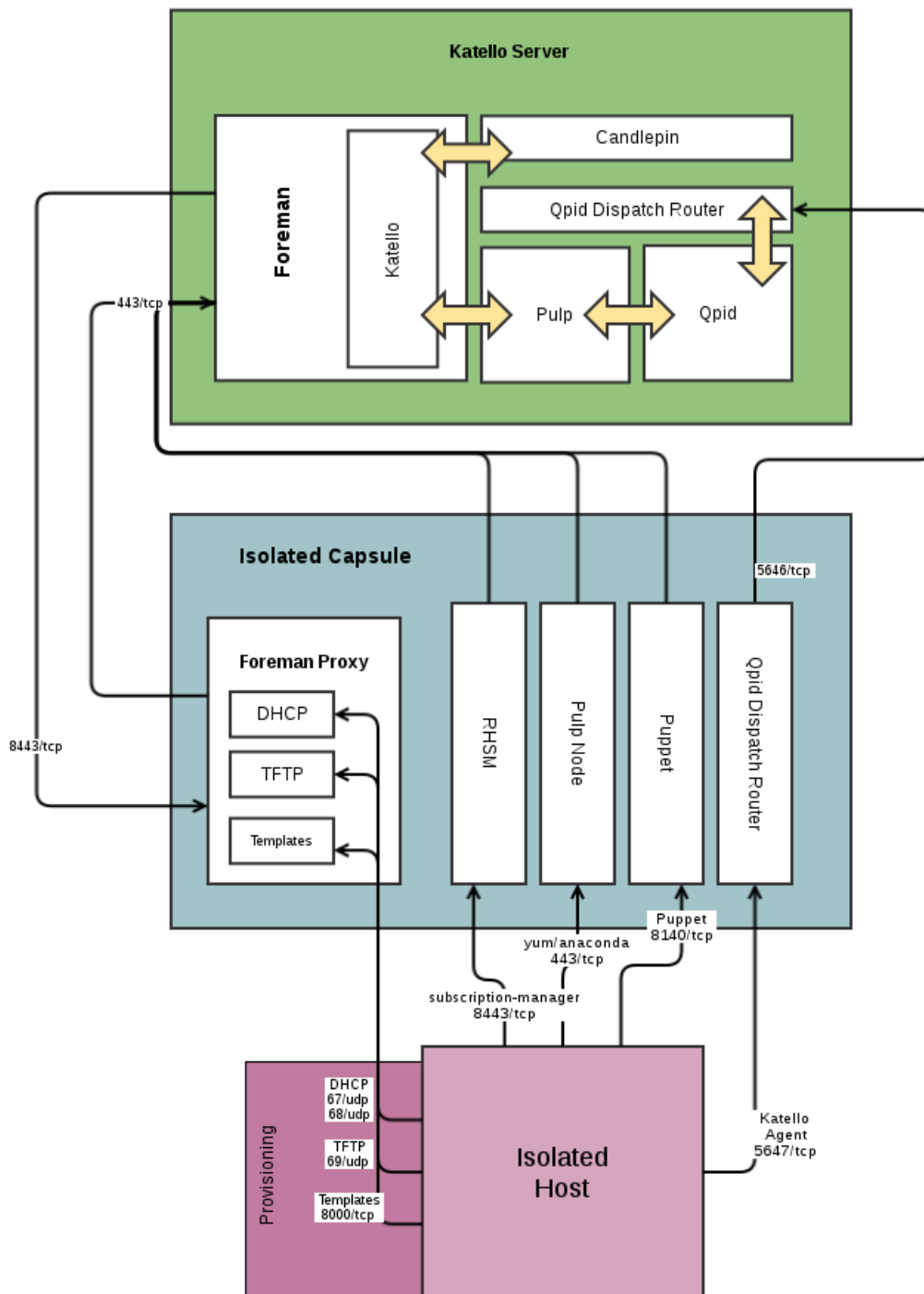
## Removal

To stop all services and remove all Katello and Foreman related packages, run the following command as root on the capsule:

```
capsule-remove
```

## Capsule Isolation

The goal of Capsule Isolation is to provide a single endpoint for all of a client's communication, so that in remote network segments, you need only open Firewall ports to the Capsule itself. The following section details the communication clients need to have with a Capsule. The installation options mentioned are the default starting with Katello 2.2.



## Content and Configuration Services

There are five primary areas that require client communication:

### 1 - Content Delivery

That is, yum. Katello Capsules by default have the Pulp feature, which mirrors content for the selected Lifecycle Environments.

Install Option:

- `--pulp=true`

Required Connectivity:

- Clients need to be able to communicate with the Capsule on port 443/tcp.

### 2 - Katello Agent

The Katello agent is a goferd plugin which allows you to schedule remote actions on hosts such as package installation, updates, etc. A capsule must be running the Qpid Dispatch Router service for this feature to work.

Install Option:

- `--qpid-router=true`

Required Connectivity:

- Clients need to be able to communicate with the Capsule on port 5647/tcp

### 3 - Puppet & Puppet CA

By default, the Puppet CA feature on the Capsule is an independent CA which will manage the certificates for all the clients registered against the Capsule. Simply select the Puppetmaster and Puppet CA to be the Capsule when creating a host.

Install Option:

- `--puppet=true --puppetca=true` .

Required Connectivity:

- Clients need to communicate with the Capsule on port 8140/tcp.

### 4 - Subscription Management

Content Hosts utilize [Subscription Manager](#) for registration to Katello and enabling/disabling specific repositories.

Install Option:

- `--reverse-proxy=true`

Required Connectivity:

- Clients need to talk to the Capsule on port 8443/tcp.

### 5 - Provisioning Services

When provisioning a host using DHCP/PXE, you will need, at a minimum, the TFTP feature enabled on the capsule, and a DHCP server available. While not required, the Capsule can provide the DHCP service. In order for the installer to obtain its kickstart template from the Capsule, you should enable the templates feature.

If a TFTP proxy has the Templates feature as well, Foreman will automatically make the communication isolated. Your clients need to talk to the Capsule on port 67/udp and 68/udp for DHCP, 69/udp for TFTP, and 8000/tcp for Templates.

Consult the installer's `--help` for the full range of provisioning options.

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## Content

Katello can currently host two different types of content, RPMs and puppet modules. RPMs and Puppet Modules can be synced from an external resource or can be uploaded directly.

The advantages to using Katello to mirror your local content are:

- Reduce bandwidth usage and increase download speed by having client machines pull updates from Katello

- Provision hosts using local Repositories covered HERE TODO
- Customize content locally, covered HERE TODO

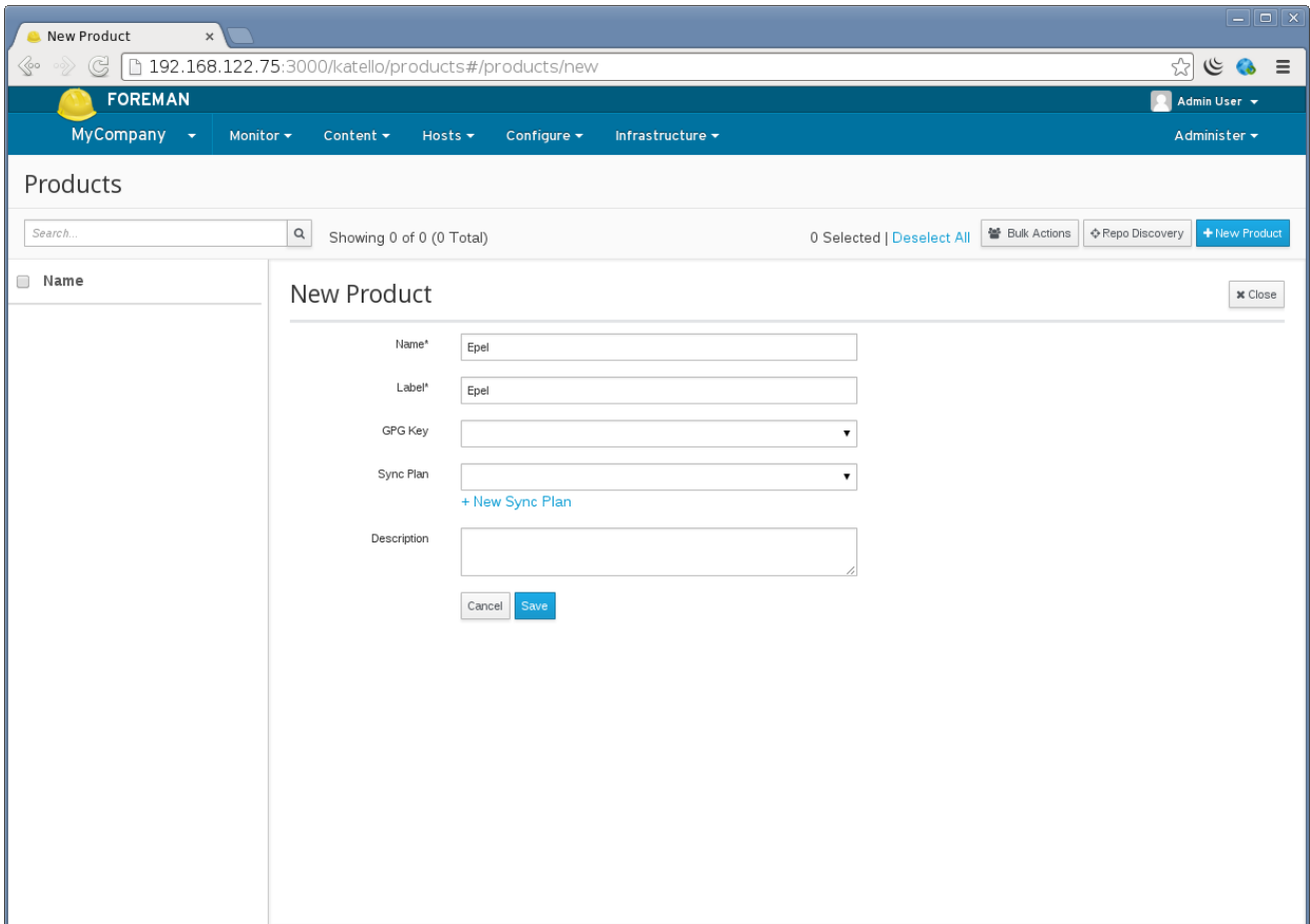
## Definitions

- Repository - Collection of content (either RPM or puppet)
- Product - Collection of Repositories, Content Hosts subscribe to a product
- Library - A special pre-created Lifecycle Environment where Repositories are created and content is synced or uploaded to. A Content Host can subscribe to library and receive content as soon as the content is synced or uploaded.

## Creating a Product

From the web UI, navigate to:

Content > Products > New Product (top right)



The screenshot shows the Foreman web interface for creating a new product. The browser address bar shows the URL `192.168.122.75:3000/katello/products#/products/new`. The page title is "New Product". The navigation menu includes "MyCompany", "Monitor", "Content", "Hosts", "Configure", and "Infrastructure". The user is logged in as "Admin User". The main content area shows a "Products" table with a search bar and a "New Product" button. The "New Product" form is open, showing the following fields:

- Name\*: Epel
- Label\*: Epel
- GPG Key: [Dropdown menu]
- Sync Plan: [Dropdown menu] with a link for "+ New Sync Plan"
- Description: [Text area]

At the bottom of the form are "Cancel" and "Save" buttons. The "Save" button is highlighted in blue.

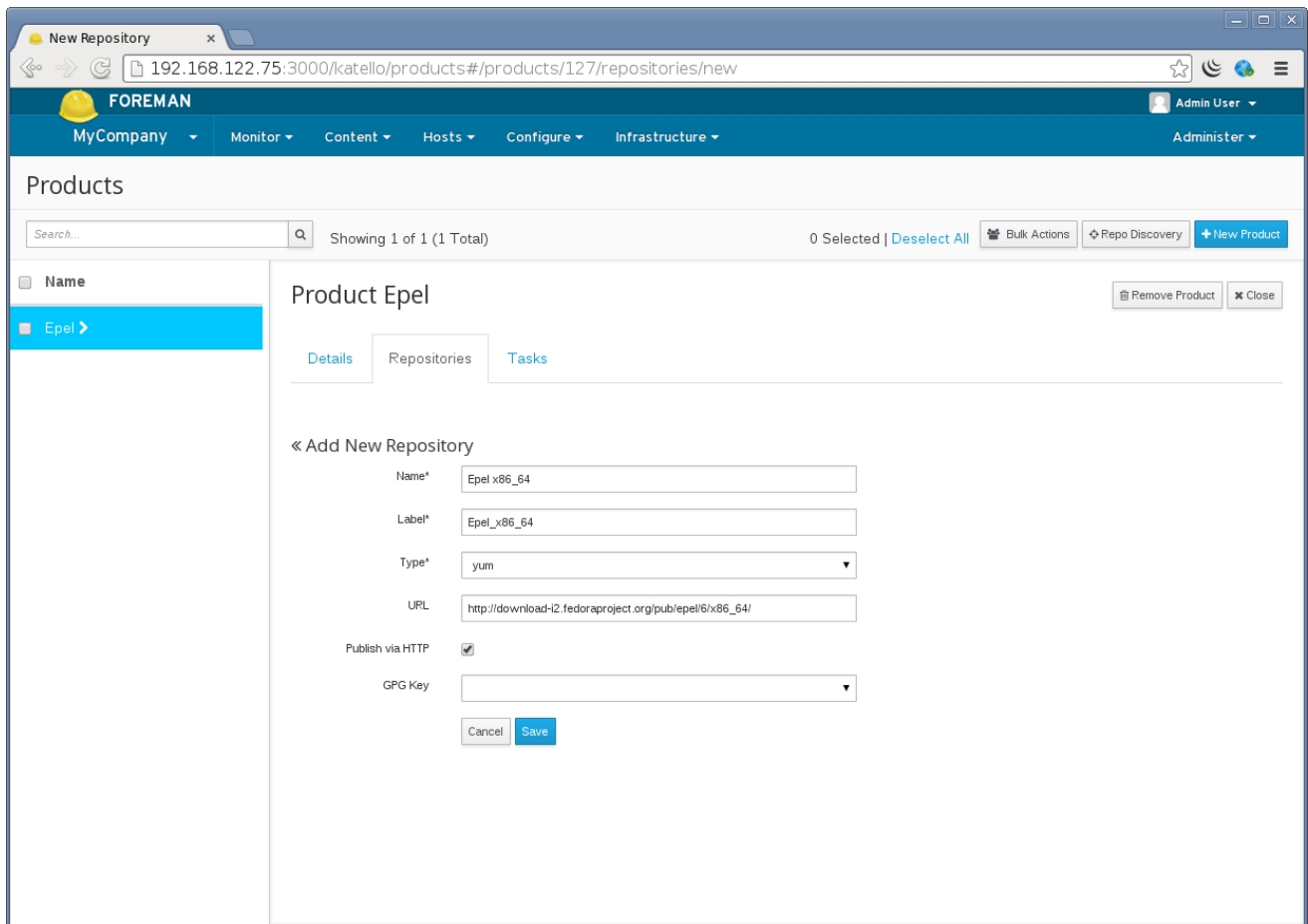
## Creating a Repository

From the web UI, navigate to:

Content > Products > Select desired product > Create Repository (right hand side)

Note the following options:

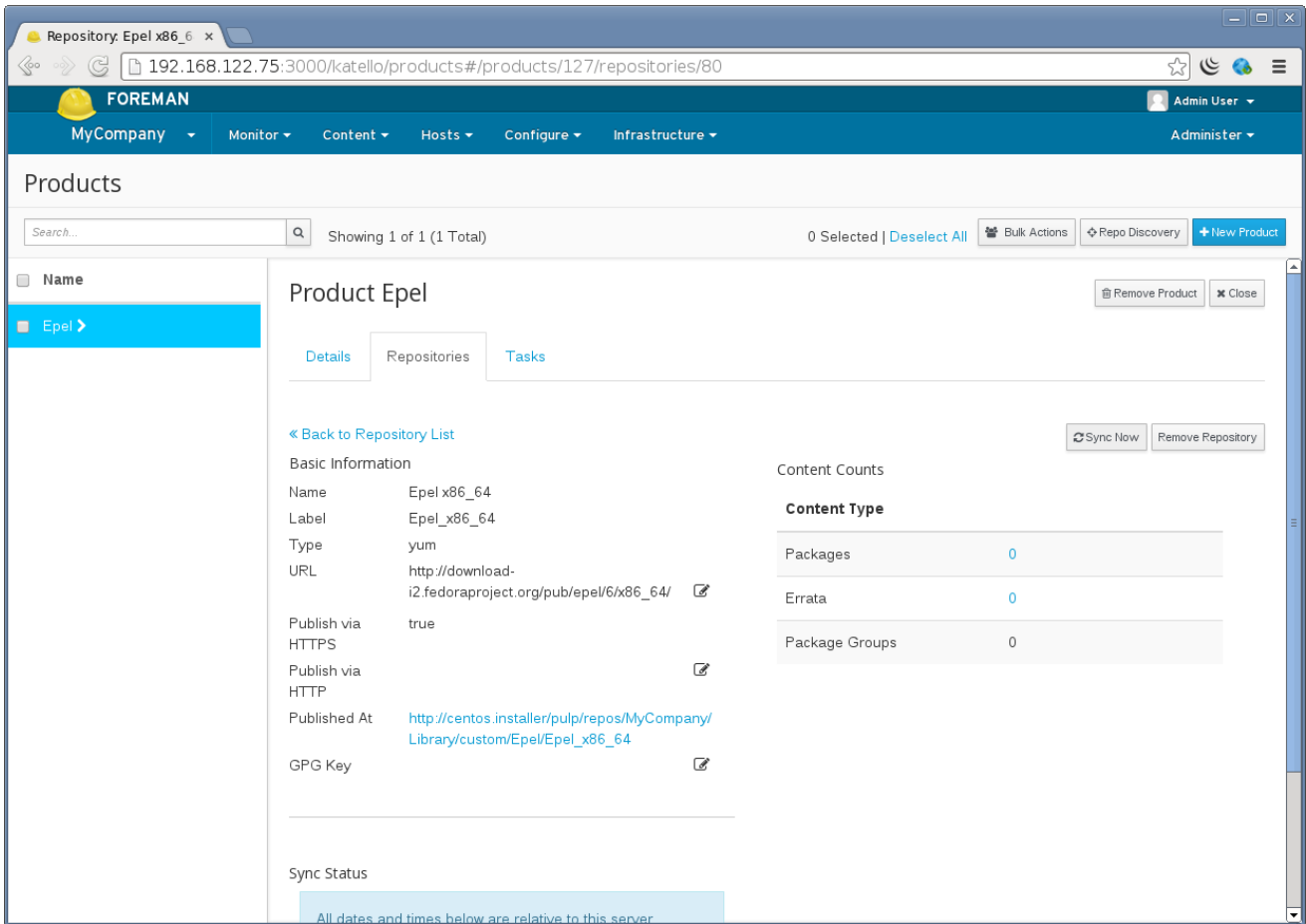
- Publish via HTTP: allows access to the Repository without any restriction. Unless you desire to restrict access to your content in this Repository, we recommended to leave this checked.
- URL: If you are syncing from an external Repository (yum or puppet), this would be filled in. This can be changed, added, or removed later. For example if you are wanting to create a mirror of EPEL, you would set this to `'https://dl.fedoraproject.org/pub/epel/6/x86_64/'`.



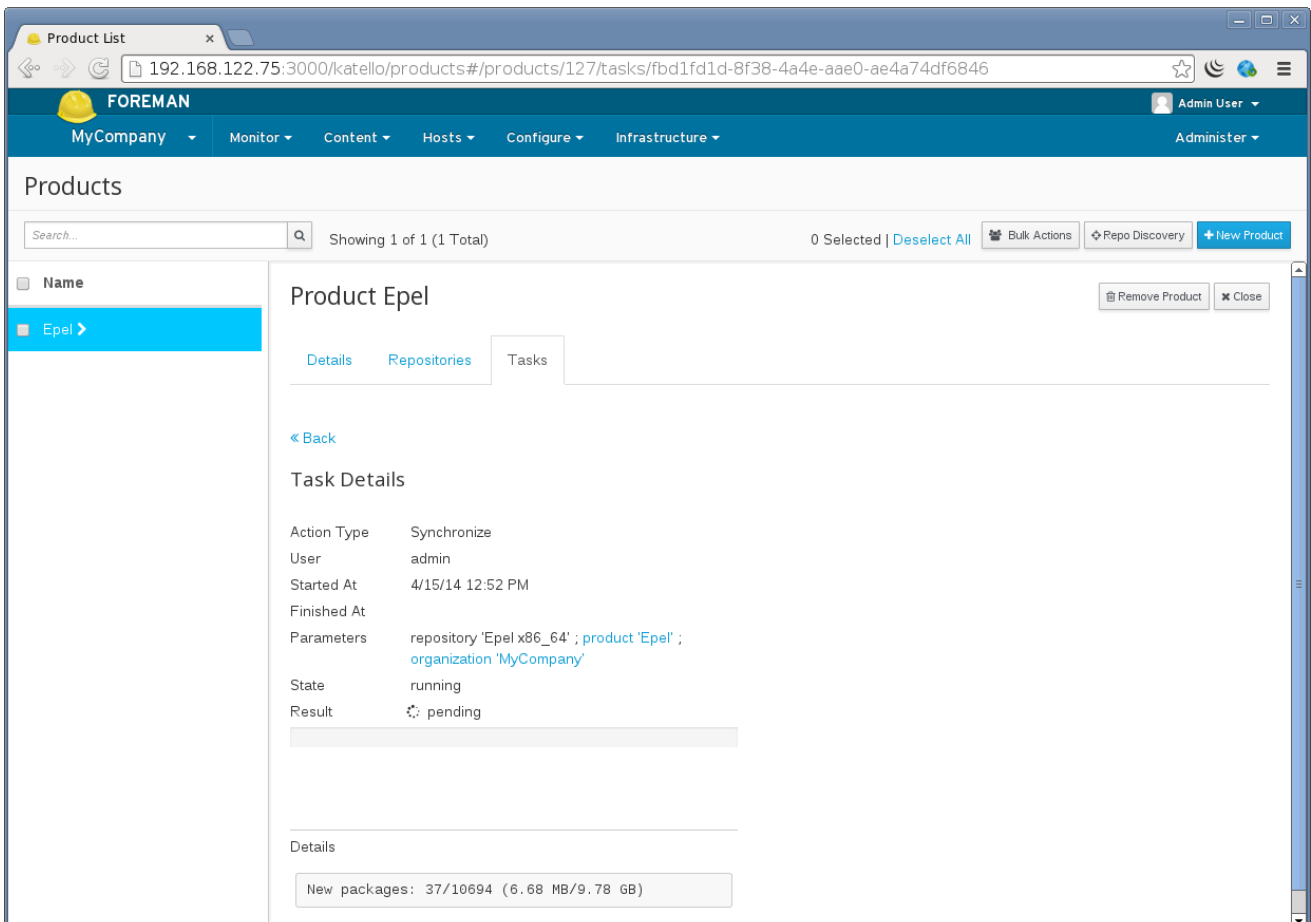
## Syncing a Repository

From the web UI, navigate to:

Content > Products > Select desired product > Select the Repository > Sync Now



The progress will be displayed:

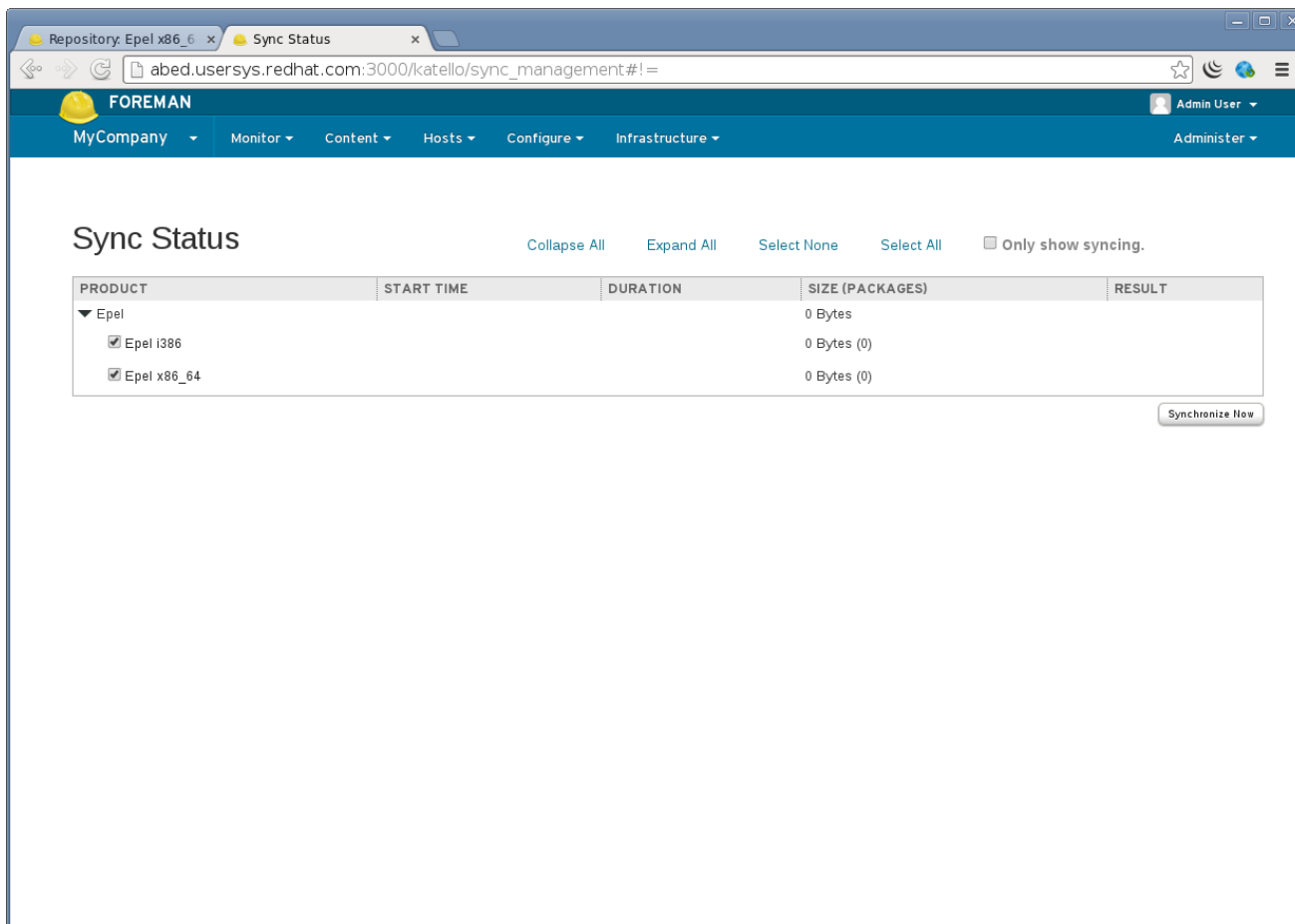


Syncing multiple repositories

To easily sync multiple repositories at once and track their progress, navigate to:

Content > Sync Status

From here you can expand the desired products, and select multiple repositories to sync.



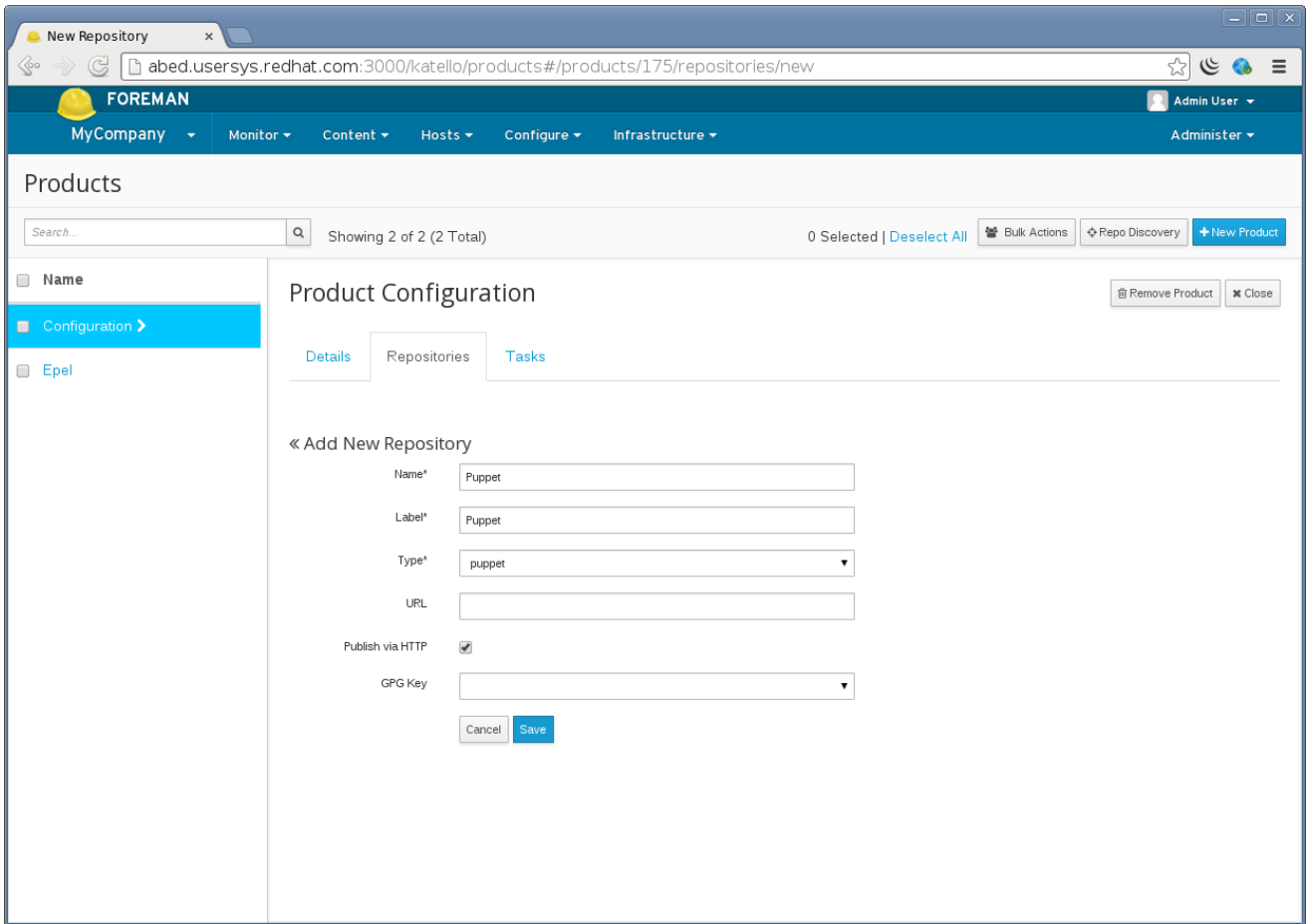
## Uploading RPM Content

Uploading RPM content directly is not currently supported. You will need to build a custom yum Repository. TODO Provide instructions on creating a custom yum repo

## Uploading Puppet Content

To upload puppet modules, first create a Repository with type puppet (similarly to creating a yum Repository above):

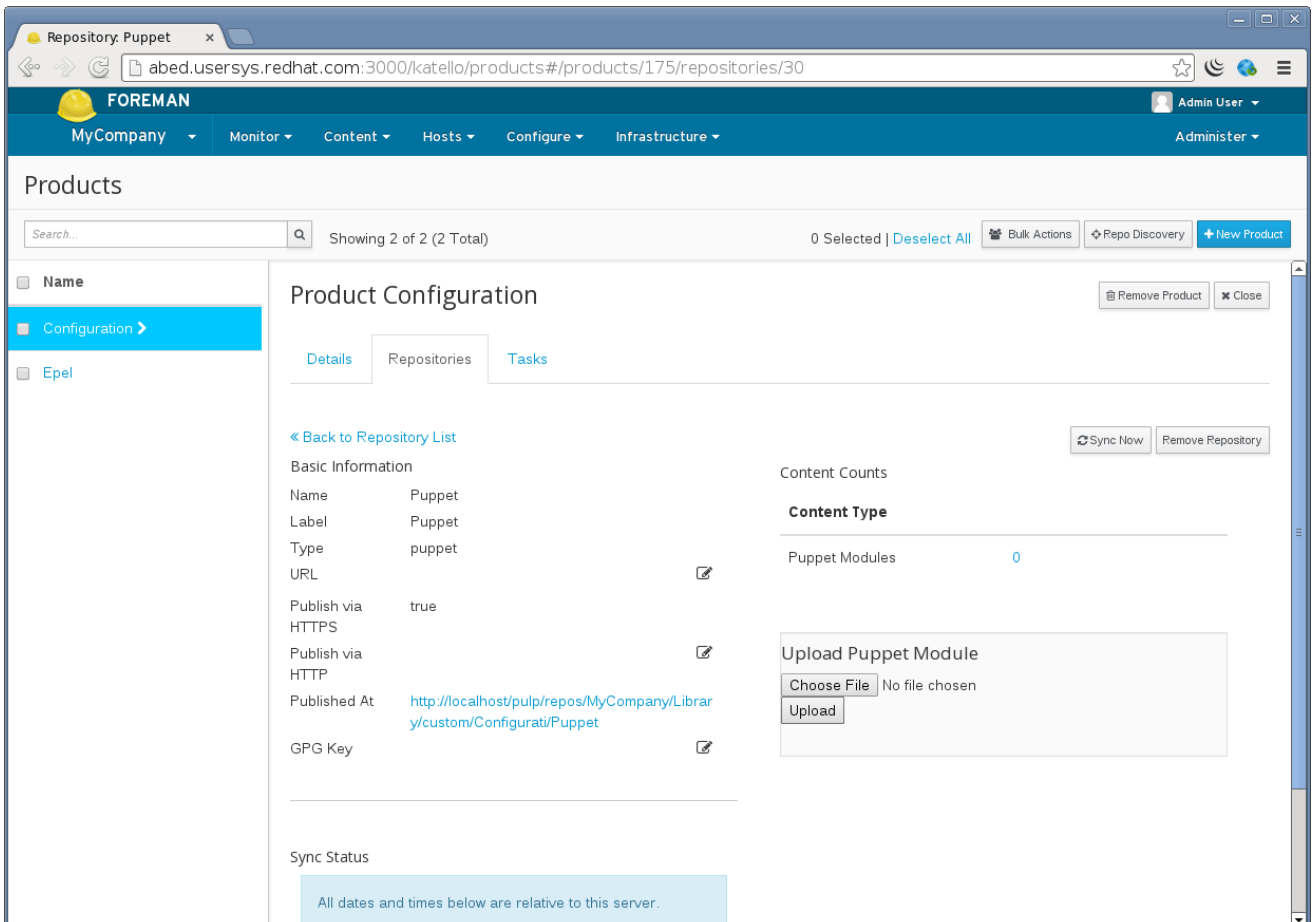




When creating this Repository the URL field can be left blank.

Puppet modules can be uploaded via the Web UI, navigate to:

Content > Repositories > Products > Select desired Product > Select desired Puppet Repository > Select file on the right



# Subscribing a System to a Product for yum content

To read about registering systems and subscribing them to the Product click [TODO](#).

## Scheduling Repository Synchronization

Sync plans give you the ability to schedule Repository synchronization on a hourly, daily or weekly basis. Sync Plans are applied to Products and thus all Repositories within a Product will be synchronized according to the products plan.

### Creating a Sync Plan

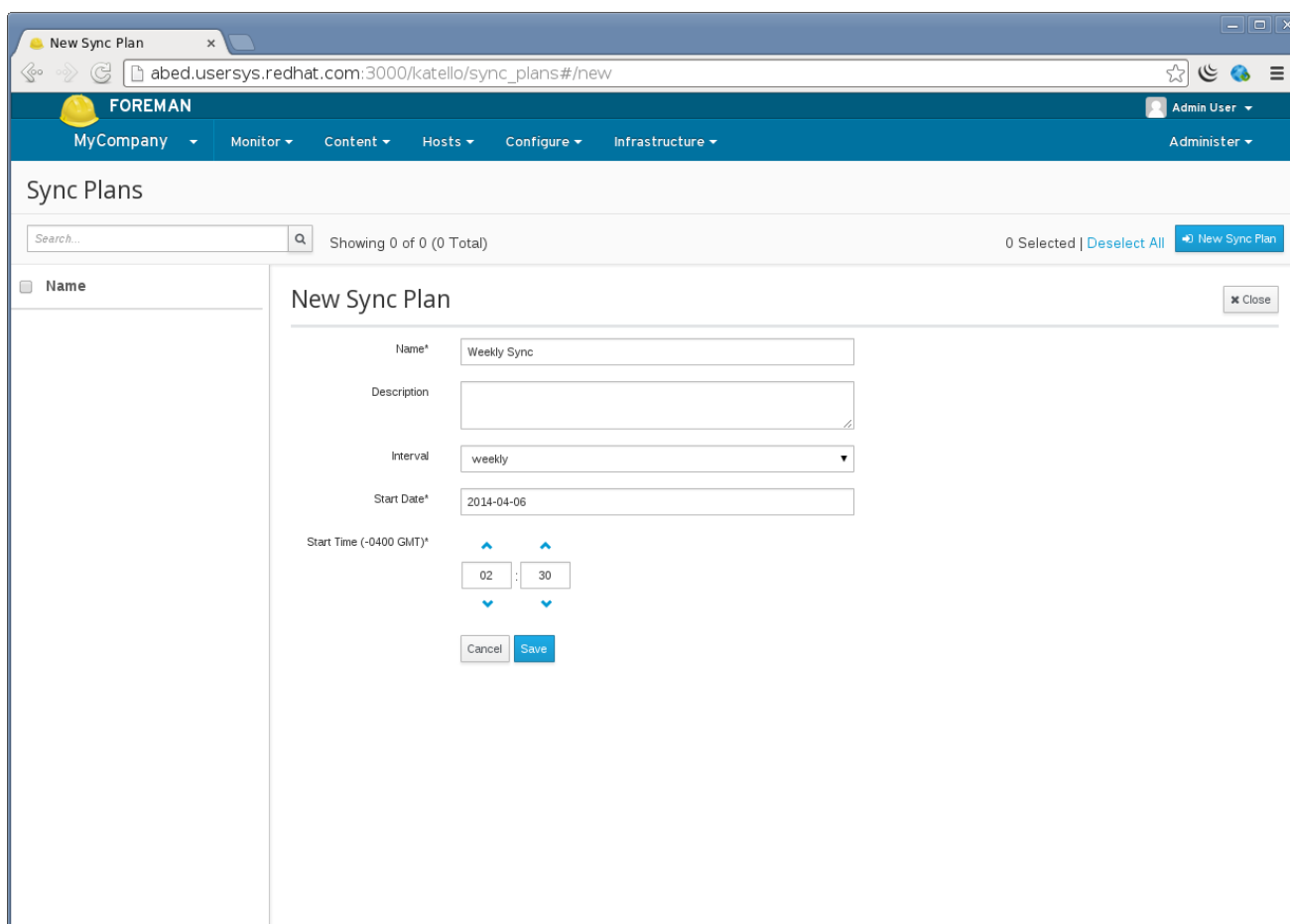
If you would like to schedule certain repositories to sync on a hourly, daily or weekly basis, Sync Plans give you this capability.

To create a Sync Plan, navigate to:

Content > Sync Plans > click "New Sync Plan" on the upper right

The *Start Date* and *Start Time* fields are used as the day of the week/month and time of the day to run the re-occurring syncs.

For example a sync plan that starts on Sunday 2014-04-06 at 2:30 will occur every Sunday at 2:30 every week if it has a weekly interval. If on a daily interval it would sync every day at 2:30.



The screenshot shows a web browser window with the URL `abed.usersys.redhat.com:3000/katello/sync_plans#/new`. The page title is "New Sync Plan". The interface includes a navigation bar with "MyCompany", "Monitor", "Content", "Hosts", "Configure", and "Infrastructure" menus. A search bar is present with the text "Showing 0 of 0 (0 Total)". A "New Sync Plan" button is visible in the top right. The main content area is titled "New Sync Plan" and contains the following form fields:

- Name\*: Weekly Sync
- Description: (empty text area)
- Interval: weekly
- Start Date\*: 2014-04-06
- Start Time (-0400 GMT)\*: 02 : 30

At the bottom of the form are "Cancel" and "Save" buttons.

### Assigning a Sync Plan to a Product

Navigate to:

Content > Sync Plans > Select your Sync Plan > Products > Add

Then select the Products you want to add and click "Add Selected" in the upper right.

The screenshot shows the Foreman web interface for managing Sync Plans. The page title is 'Sync Plans' and the sub-page is 'Sync Plan Weekly Sync'. The interface includes a search bar, a navigation menu, and a table of products. The table has columns for Name, Description, Sync Status, and Repositories. The 'Epel' product is selected and highlighted in blue.

Name	Description	Sync Status	Repositories
<input type="checkbox"/> Configuration		Never synced	1
<input checked="" type="checkbox"/> Epel		Never synced	2

## GPG Keys

To learn about securing your packages and Repositories with GPG Keys click here. TODO

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## Content Hosts

### What is a Host?

A Host is a Foreman concept that represents a server/host/system/computer (whatever you want to call it). In addition to holding facts about the system, it:

- Stores which operating system the system should be running
- Stores which puppet classes should be assigned
- Stores which parameters apply to which puppet classes
- Allows you to re-provision the machine

## What are Content Hosts?

Content Hosts are the part of a host that manages Content and Subscription related tasks. As time goes on more and more of this functionality will be moved to the Host object. A Host's Content Host:

- Stores which Products are assigned (i.e. which Repositories will the system pull content from)
- Initiates package install/upgrade/removal
- Determines which errata apply to a system
- Initiates errata installation

## How is a Content Host registered?

Subscription Manager is the client for Katello that handles registration.

### Installing Subscription Manager

Depending on your Operating System, for:

- RHEL, subscription-manager is installed by default
- Fedora, subscription-manager is available from the Everything repo for its release: `yum install subscription-manager`
- CentOS 7, subscription-manager is available in the 'os' repo for its release: `yum install subscription-manager`
- CentOS 5/6, enable the upstream subscription-manager repo and then install subscription-manager (be sure to change '6' to '5' if you're on EL5, as the version from 6 will not work):

```
wget -O /etc/yum.repos.d/subscription-manager.repo http://copr.fedoraproject.org/coprs/dgoodwin/subscription-manager/repo/epel-6/dgoodwin-subscription-manager-epel-6.repo
yum install subscription-manager -y
```

### Registering with Subscription Manager

First install the bootstrap rpm from your Katello server:

```
rpm -Uvh http://$KATELLO_HOSTNAME/pub/katello-ca-consumer-latest.noarch.rpm
```

Then register:

```
subscription-manager register --org=Default_Organization --environment=Library
```

Subscription manager will prompt for your username and password. You can also specify `--username $USER --password $PASS` on the command line.

### Registering to a Content View

To register to Content View "MyView" in a "Devel" Lifecycle Environment:

```
subscription-manager register --org=Default_Organization --environment=Devel/MyView
```

### Registering without using a username and password

Activation Keys allow you to register and consume content without using a username and password. To create an Activation Key see the [Activation Key Guide](#)

Once you have created an activation key, register with:

```
subscription-manager register --org=Default_Organization --activationkey=$KEY_NAME
```

## Actions with registered Content Hosts

To see the list of your Content Hosts, navigate to Hosts > Content Hosts

Name	Subscription Status	OS	Environment	Content View	Registered	Last Checkin
client.devel	●	Red Hat Enterprise Linux Server 6.4		Default Organization View	7/3/14 10:02 AM	7/3/14 10:02 AM
dhcp129-73.rdu.redhat.com	●	Red Hat Enterprise Linux Server 6.5		Default Organization View	6/19/14 10:30 AM	7/10/14 12:56 PM
dhcp129-81.rdu.redhat.com	●	Red Hat Enterprise Linux Server 7.0		Default Organization View	6/18/14 3:16 PM	6/23/14 7:15 PM
testks.rdu.redhat.com	●	Red Hat Enterprise Linux Server 6.5		MyDistro	6/19/14 4:45 PM	6/20/14 4:47 PM
testks.rdu.redhat.com	●	Red Hat Enterprise Linux Server 6.5		ErrataTest	6/19/14 4:26 PM	6/19/14 4:30 PM

## Changing the Lifecycle Environment and Content View of a Content Host:

Navigate to the Content Host Details page, Host > Content Hosts > Click the name of the desired Content Host

The screenshot shows the Foreman interface for a Content Host. The main content area is titled "Content Host dhcp129-73.rdu.redhat.com". There are several tabs: Details, Provisioning Details, Subscriptions, Host Collections, Tasks, Packages, Errata, and Product Content. The "Content Host Content" section is visible in the upper right, showing the Release Version, Content View (Default Organization View), and Environment (Library/Dev). The "Content Host Status" section shows the Registered and Checkin times. The "Networking" section shows the Hostname, IPv4 Address, IPv6 Address, and Interfaces.

Look in the upper right corner for the "Content Host Content":

Content Host Content

Release Version



Content View

Default Organization View



Environment

Library  Dev

Then select the new Lifecycle Environment you desire, select the new Content View you desire, and click save.

## Assigning a Content Host to a Product

In order for a Content Host to receive package updates and access Repositories hosted on Katello, it needs to be subscribed to a product.

Navigate to Hosts > Content Hosts > Select Content Host > Subscriptions > Click the "Add" tab

The screenshot shows the Foreman web interface for managing Content Hosts. The top navigation bar includes 'FOREMAN', 'ACME\_Corporation', and various menu items like 'Monitor', 'Content', 'Hosts', 'Configure', and 'Infrastructure'. The user is logged in as 'Admin User'.

The main section is titled 'Content Hosts' and shows a search bar and a list of content hosts. The selected host is 'dhcp129-73.rdu.redhat.com'. The interface displays the 'Subscriptions' tab for this host, showing a message: 'Successfully removed 1 subscriptions.' Below this, the 'Subscription Details' are shown, indicating the status is 'invalid' and the details are 'Red Hat Enterprise Linux Server - Not supported by a valid subscription.' There are buttons for 'List/Remove', 'Add', and 'Run Auto-Attach'.

Below the details, there is a table showing the subscriptions for the selected host:

Quantity	Attached	Starts	Expires	Support Level	Contract	Account
1	0 out of Unlimited	6/18/14	6/10/44			
1	1 out of Unlimited	6/4/14	5/27/44			

Check the checkbox under the Products you want to add and select "Add Selected" in the upper right.

To see existing attached Products, click the "List/Remove" tab. To remove a Product, select the checkbox under the desired Product in this list and click "Remove Selected".

## Package Management

To perform package actions on a singleContent Host, navigate to: Hosts > Content Hosts > Select Content Host > Packages

Content Hosts

Search... Showing 5 of 5 (5 Total) 0 Selected | Deselect All Bulk Actions Register Content Host

Name

- client.devel
- dhcp129-73.rdu.redhat.com
- dhcp129-81.rdu.redhat.com
- testks.rdu.redhat.com
- testks.rdu.redhat.com

Content Host **dhcp129-73.rdu.redhat.com** Unregister Content Host Close

Details Provisioning Details Subscriptions Host Collections Tasks Packages Errata Product Content

Package Actions

Package Install Package/Group Name Perform

Installed Packages

Filter Showing 416 Packages Update All

Installed Package	Remove
acl-2.2.49-6.el6.x86_64	⊖
aic94xx-firmware-30-2.el6.noarch	⊖
apr-1.3.9-5.el6_2.x86_64	⊖
apr-util-1.3.9-3.el6_0.1.x86_64	⊖
apr-util-ldap-1.3.9-3.el6_0.1.x86_64	⊖
atmel-firmware-1.3-7.el6.noarch	⊖
attr-2.4.44-7.el6.x86_64	⊖
audit-2.2-4.el6_5.x86_64	⊖

From here you can:

- See a list of installed packages
- Perform a yum install/update/remove of a Package or Package Group
- Update all packages (equivalent of running 'yum update')

## View and Install Applicable Errata

If your synced Repositories contain Errata, you can use Katello's Errata management to track and install Errata.

Navigate to: Hosts > Content Hosts > Select Content Host > Errata

Content Hosts

Search... Showing 1 of 1 (1 Total) 0 Selected Bulk Actions Register Content Host

Name

- client.devel.foo6

Content Host **client.devel.foo6** Unregister Content Host Close

Details Provisioning Details Subscriptions Host Collections Tasks Packages Errata Product Content

Applicable Errata

Show from: Current Environment (dev/incremental test)

Search... Showing 231 of 231 (231 Total) 0 Selected Apply Selected

Type	Id	Title	Issued
⊖ Bug Fix Advisory	<a href="#">RHBA-2014:1909</a>	lvm2 bug fix update	11/25/14
⊖ Bug Fix Advisory	<a href="#">RHBA-2014:1734</a>	yum-rhn-plugin bug fix update	10/29/14
⊕ Product Enhancement Advisory	<a href="#">RHEA-2014:1733</a>	tzdata enhancement update	10/28/14
⊖ Bug Fix Advisory	<a href="#">RHBA-2014:1666</a>	gcc enhancement update	10/19/14
⚠ Security Advisory - Moderate	<a href="#">RHSA-2014:1671</a>	Moderate: rsyslog5 and rsyslog security update	10/19/14
⚠ Security Advisory - Moderate	<a href="#">RHSA-2014:1655</a>	Moderate: libxml2 security update	10/15/14

To apply errata, search for the errata you want and select the checkbox beside each errata. Then click "Apply Selected" at the top right.



The "Show From" filters what applicable errata to show:

- Current Environment - Shows only Applicable Errata available in the Host's Content View & Lifecycle Environment.
- Previous Environment - Shows Applicable Errata that are available from the Host's Content View but in the previous Lifecycle Environment. Promoting the Content View Version from that previous Lifecycle Environment to the current Lifecycle Environment for this Host would cause all Applicable Errata shown to then be available.
- Library Synced Content - Shows Applicable Errata which have been synced to the Library. This shows you what is applicable even when the Errata have not been published into a Content View. All applicable Errata are shown regardless of availability to the Content Host.

## Change Host Collection Assignments

To change Host Collection assignments for a Content Host, navigate to: Hosts > Content Hosts > Select Content Host > Host Collections

The screenshot shows the Foreman web interface for managing Content Hosts. The top navigation bar includes the Foreman logo, the organization name 'ACME\_Corporation', and various menu items like 'Monitor', 'Content', 'Hosts', 'Configure', and 'Infrastructure'. The user is logged in as 'Admin User'.

The main content area is titled 'Content Hosts' and shows a search bar, a 'Showing 5 of 5 (5 Total)' indicator, and buttons for 'Bulk Actions' and 'Register Content Host'. A list of content hosts is shown on the left, with 'dhcp129-73.rdu.redhat.com' selected.

The selected host's details are shown, including tabs for 'Details', 'Provisioning Details', 'Subscriptions', 'Host Collections', 'Tasks', 'Packages', 'Errata', and 'Product Content'. The 'Host Collections' tab is active, showing 'Host Collection Management' with 'List/Remove' and 'Add' buttons.

Below the management buttons is a table of host collections:

Name	Description	Capacity
<input type="checkbox"/> Database Servers		1 / Unlimited

## Bulk Actions

Katello provides the ability to perform actions on many Content Hosts at once such as:

- Package installation/upgrade/removal
- Listing and applying applicable errata
- Assigning Host Collections
- Changing Lifecycle Environment and Content View assignments

In order to use the bulk actions, perform whatever search you desire and select which Content Hosts you want to modify. If you want to select all Content Hosts from a search result, click the 'checkbox' above the table:

Name	Subscription Status	OS	Environment	Content View	Registered	Last Checkin
<input type="checkbox"/> client.devel	●	Red Hat Enterprise Linux Server 6.4	Library	Default Organization View	7/3/14 10:02 AM	7/3/14 10:02 AM
<input type="checkbox"/> dhcp129-73.rdu.redhat.com	●	Red Hat Enterprise Linux Server 6.5	Library	Default Organization View	6/19/14 10:30 AM	7/11/14 12:56 PM
<input type="checkbox"/> dhcp129-81.rdu.redhat.com	●	Red Hat Enterprise Linux Server 7.0	Library	Default Organization View	6/18/14 3:16 PM	6/23/14 7:15 PM
<input type="checkbox"/> test1.devel.example.com	●		Dev	StableOS	7/11/14 4:23 PM	Never checked in
<input type="checkbox"/> test10.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input type="checkbox"/> test11.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input type="checkbox"/> test12.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input type="checkbox"/> test13.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input type="checkbox"/> test14.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input type="checkbox"/> test15.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input type="checkbox"/> test16.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input type="checkbox"/> test17.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input type="checkbox"/> test18.devel.example.com	●		Dev	StableOS	7/11/14 4:33 PM	Never checked in
<input type="checkbox"/> test19.devel.example.com	●		Dev	StableOS	7/11/14 4:33 PM	Never checked in

This will select all Content Hosts on that page (only the ones that are visible). To select all that correspond to that search query, notice a bar has now appeared:

Name	Subscription Status	OS	Environment	Content View	Registered	Last Checkin
All 20 items on this page are selected. Select all 35.						
<input checked="" type="checkbox"/> client.devel	●	Red Hat Enterprise Linux Server 6.4	Library	Default Organization View	7/3/14 10:02 AM	7/3/14 10:02 AM
<input checked="" type="checkbox"/> dhcp129-73.rdu.redhat.com	●	Red Hat Enterprise Linux Server 6.5	Library	Default Organization View	6/19/14 10:30 AM	7/11/14 12:56 PM
<input checked="" type="checkbox"/> dhcp129-81.rdu.redhat.com	●	Red Hat Enterprise Linux Server 7.0	Library	Default Organization View	6/18/14 3:16 PM	6/23/14 7:15 PM
<input checked="" type="checkbox"/> test1.devel.example.com	●		Dev	StableOS	7/11/14 4:23 PM	Never checked in
<input checked="" type="checkbox"/> test10.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input checked="" type="checkbox"/> test11.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input checked="" type="checkbox"/> test12.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input checked="" type="checkbox"/> test13.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input checked="" type="checkbox"/> test14.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input checked="" type="checkbox"/> test15.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input checked="" type="checkbox"/> test16.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input checked="" type="checkbox"/> test17.devel.example.com	●		Dev	StableOS	7/11/14 4:32 PM	Never checked in
<input checked="" type="checkbox"/> test18.devel.example.com	●		Dev	StableOS	7/11/14 4:33 PM	Never checked in
<input checked="" type="checkbox"/> test19.devel.example.com	●		Dev	StableOS	7/11/14 4:33 PM	Never checked in

Next select the 'Bulk Actions' button in the top right.

From here you can select the tab corresponding to any action you wish to perform.



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## Content Views

What can a Content View be used for?

- To stage content through environments (Dev, Test, Production).
- To filter the contents of a repository (include a package or exclude certain errata, for example).
- To have multiple snapshots of the same repository and/or puppet modules.

# Definitions

- Content View - snapshot of one or more repositories and/or puppet modules.
- Composite Content View - a Content View that contains a collection of other Content Views.
- Filter - provides finer grained control over content in a Content View. Can be used to include or exclude specific packages, package groups, or errata.
- Publishing - Content Views are 'published' in order to lock their contents in place. The content of the Content View is cloned and all filters applied. Publishing creates a new version of the Content View.
- Promoting - Content Views can be cloned to different [Lifecycle Environments](#) (Dev, Test, Production).

# General Workflow

First [create a product and repository](#) in the library environment and populate the repository with content (by syncing it or uploading content). A [Content Host](#) can now register directly to library and be attached to the content therein. Updates will be available as soon as new content is synced or uploaded.

To utilize Content Views for filtering and snapshotting:

1. Create a Content View
2. Add the desired repository and/or puppet modules to the Content View
3. Optionally create one or more Filters to fine tune the content of the Content View.
4. Publish the Content View
5. Attach the Content Host to the Content View
6. Optionally promote the Content View to another environment

At this point the Content Host will no longer be getting content directly from Library, but from the Content View. Updates to library will not affect this Content Host.

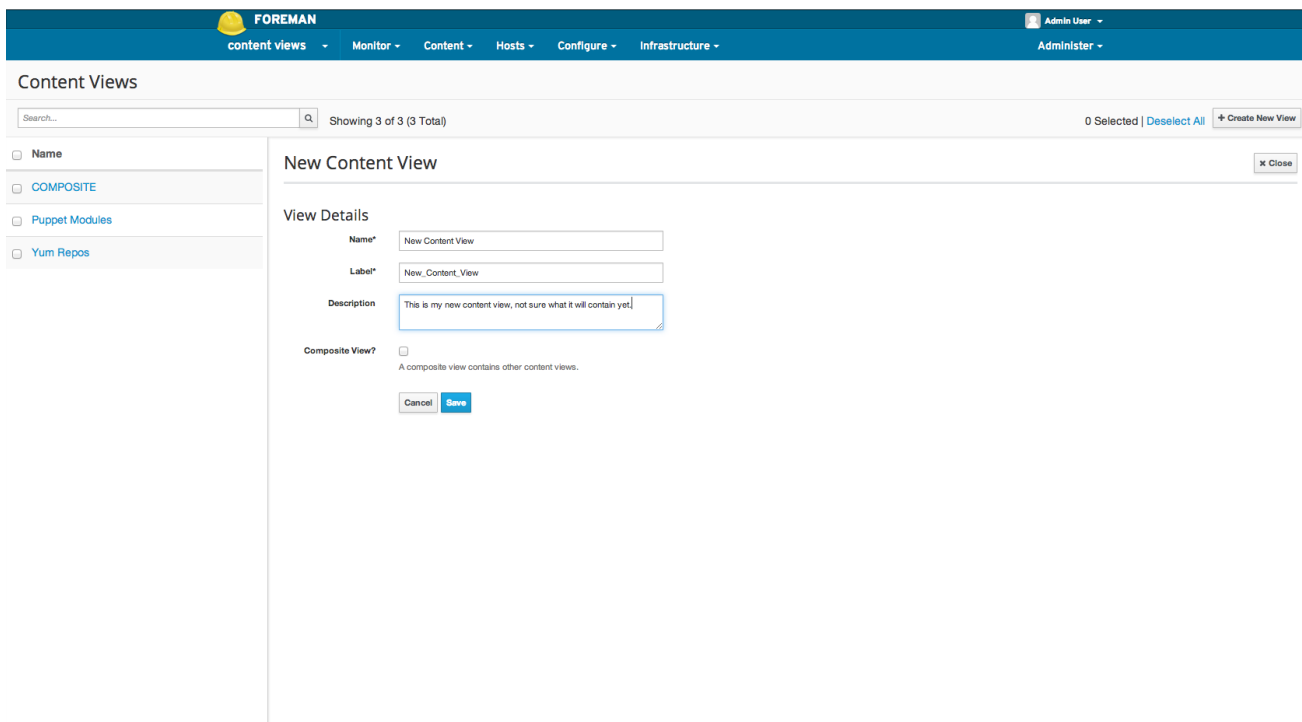
Note that all of the actions below can also done with [hammer, the CLI tool](#), and examples are given at the end of each section.

# Creating a Content View

To create a Content View using the web UI, navigate to:

Content > Content Views

Click the *Create New View* button on the top right of the screen.



From the CLI:

```
hammer content-view create \
--organization="Default Organization" \
--name="New Content View" \
--description="This is my new content view."
```

# Creating a Composite Content View

To create a Composite Content View using the web UI follow the above steps for [Creating a Content View](#) but check the "Composite View?" checkbox.

From the CLI:

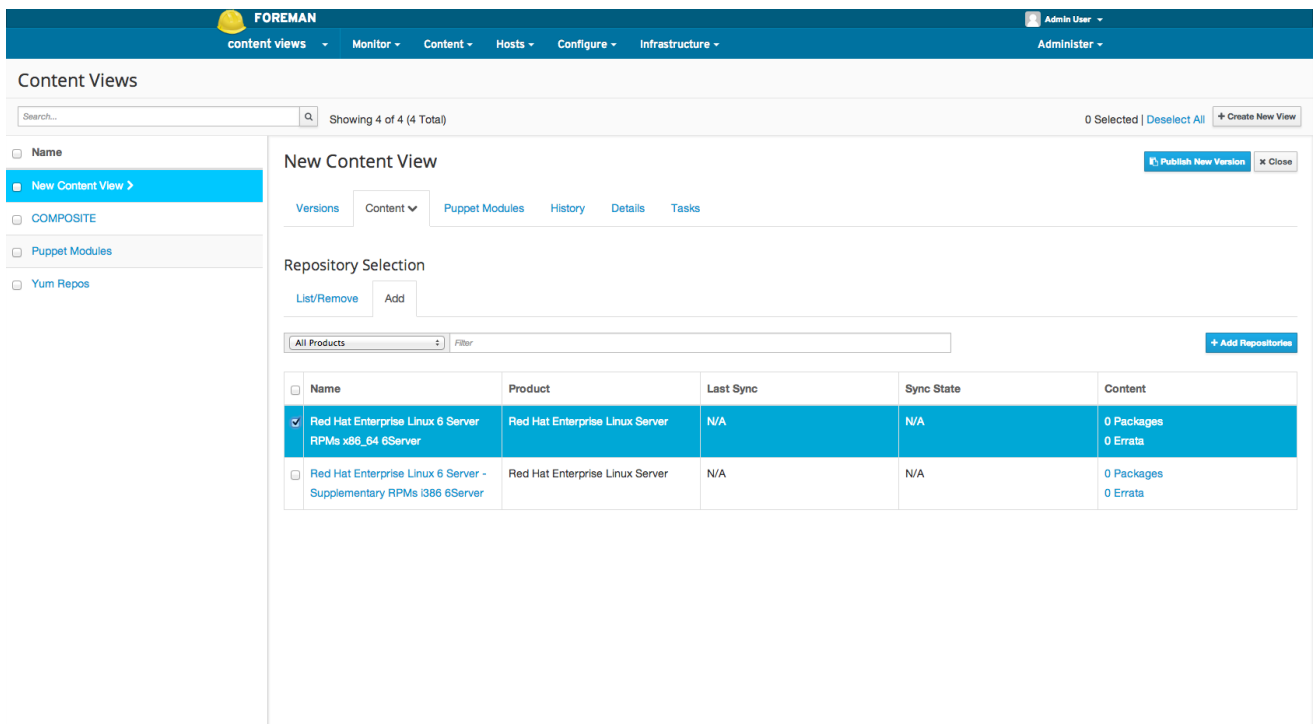
```
hammer content-view create \  
--organization="Default Organization" \  
--name="New Composite Content View" \  
--description="This is my new composite content view." \  
--composite
```

## Adding Repositories

Adding a repository to a Content View means whenever a Content View is published, all of the content contained within the repository at that time is included in the Content View. If the [repository is synced](#) after publishing the Content View, the Content View will contain the state of the repository prior to syncing. A new version of the Content View must be published in order for the new version to get the contents of the newly synced repository.

To add a repository using the web UI, navigate to:

Content > Content Views > Select the desired Content View > Content (within sub navigation) > Repositories



The screenshot shows the Foreman web interface for creating a new content view. The 'Repository Selection' section contains a table with the following data:

<input type="checkbox"/>	Name	Product	Last Sync	Sync State	Content
<input checked="" type="checkbox"/>	Red Hat Enterprise Linux 6 Server RPMs x86_64 6Server	Red Hat Enterprise Linux Server	N/A	N/A	0 Packages 0 Errata
<input type="checkbox"/>	Red Hat Enterprise Linux 6 Server - Supplementary RPMs i386 6Server	Red Hat Enterprise Linux Server	N/A	N/A	0 Packages 0 Errata

From the CLI, adding a repository:

```
hammer content-view add-repository \  
--organization="Default Organization" \  
--name="New Content View" \  
--repository="CentOS 6.5"
```

## Adding a Puppet Module

Adding a puppet module to a Content View means that whenever the Content View is published the puppet module is locked to the version selected. If the "Use Latest" version is selected then the puppet module will be "frozen" at the latest version available when the Content View is published. A new version of the Content View must be published in order for the new version to get any updated puppet module.

To add a puppet module using the web UI, navigate to:

Content > Content Views > Select the desired Content View > Puppet Modules (within sub navigation)

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## Content Views

Search... Showing 4 of 4 (4 Total) 0 Selected | Deselect All + Create New View

- Name
- COMPOSITE
- New Content View >
- Puppet Modules
- Yum Repos

### New Content View

[Publish New Version](#) [X Close](#)

Versions Content **Puppet Modules** History Details Tasks

Currently Selected Puppet Modules

Filter Showing 0 of 0 (0 Total) 0 Selected | Deselect All [+ Add New Module](#)

You currently don't have any Puppet Modules included in this Content View, you can add puppet modules using the button on the right.

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## Content Views

Search... Showing 4 of 4 (4 Total) 0 Selected | Deselect All + Create New View

- Name
- COMPOSITE
- New Content View >
- Puppet Modules
- Yum Repos

### New Content View

[Publish New Version](#) [X Close](#)

Versions Content **Puppet Modules** History Details Tasks

Module List

Select A New Puppet Module To Add

Filter Showing 4 of 4 (4 Total)

Name	Actions
apache	<a href="#">Select a Version</a>
postgresql	<a href="#">Select a Version</a>
registry	<a href="#">Select a Version</a>
stdlib	<a href="#">Select a Version</a>

Content Views

Showing 4 of 4 (4 Total)

0 Selected | Deselect All | Create New View

Name

COMPOSITE

New Content View >

Puppet Modules

Yum Repos

New Content View

Publish New Version | Close

Versions Content Puppet Modules History Details Tasks

Module List / Select Module / apache

Select an Available Version of apache

Filter

Author	Version	Summary	Repositories	Actions
puppetlabs	Use Latest (currently 1.0.1)	Puppet module for Apache	Puppet	Select Version
puppetlabs	1.0.1	Puppet module for Apache	Puppet	Select Version

Content Views

Showing 4 of 4 (4 Total)

0 Selected | Deselect All | Create New View

Name

COMPOSITE

New Content View >

Puppet Modules

Yum Repos

New Content View

Publish New Version | Close

Versions Content Puppet Modules History Details Tasks

Module List / Select Module / apache

Currently Selected Puppet Modules

Filter Showing 1 of 1 (1 Total)

0 Selected | Deselect All | Add New Module

Name	Author	Version	Actions
apache	puppetlabs	Latest (Currently 1.0.1)	Select new version Remove Module

From the CLI, first find the UUID of your puppet module from the list:

```
hammer puppet-module list \
--organization="Default Organization" \
--repository "Puppet Modules"
```

Then add the puppet module:

```
hammer content-view puppet-module add \
--organization="Default Organization" \
--content-view="New Content View" \
--uuid=91cc9bb7-dbb3-4798-b50a-45173b763cbb
```

## Adding Content Views to a Composite Content View

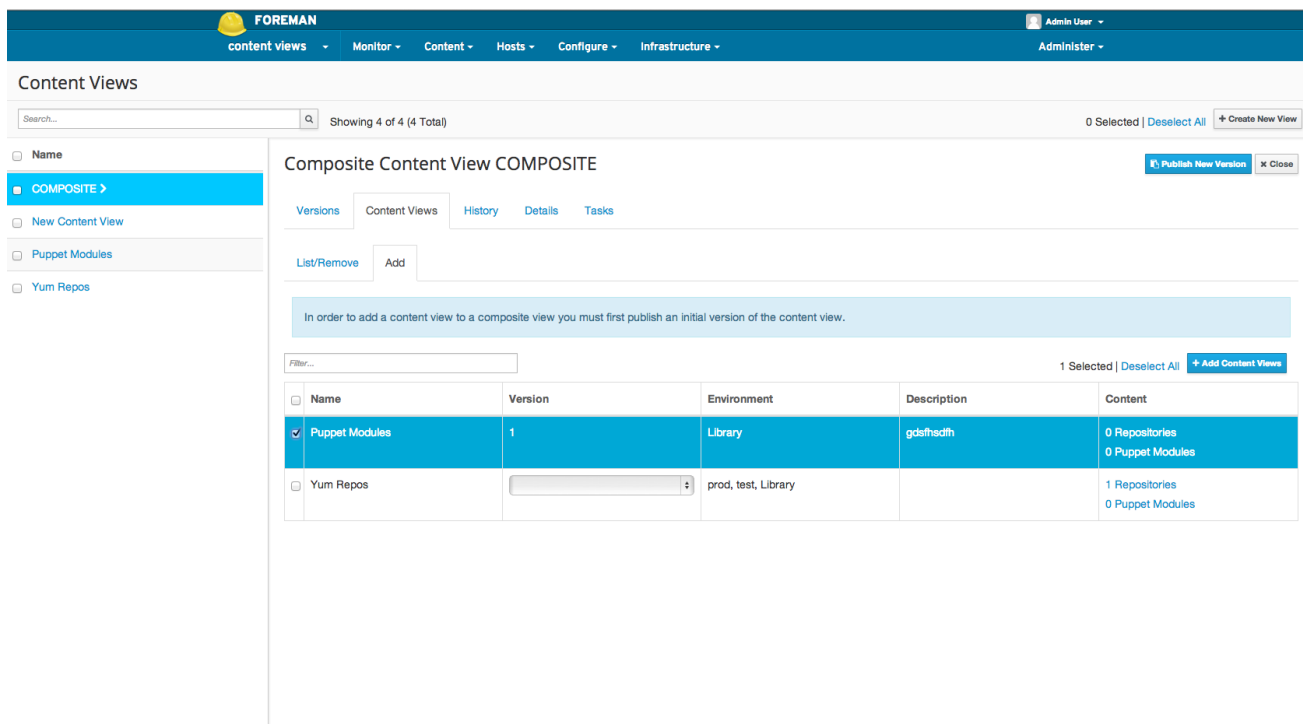
Adding a version of a Content View to a Composite Content View means whenever the Composite Content View is published, all of the content contained within the specific version of that Content View is contained in the Composite Content View. If the Content Views contained within the Composite Content View are updated (i.e. a new version is published) or if their content is



updated after publishing the Composite Content View, the Composite Content View will only contain the versions of the Content View(s) prior to syncing. A new version of the Composite Content View must be published in order for it to get the updated Content Views.

To add a Content View to a Composite Content View using the web UI, navigate to:

Content > Content Views > Select the desired Content View > Content (within sub navigation) > Repositories



Find the Content View ID of the specific version of the Content View to add:

```
hammer content-view version list \  
--organization="Default Organization" \  
--content-view="New Content View"
```

From the CLI, add a Content View to a composite Content View:

```
hammer content-view update \  
--organization="Default Organization" \  
--content-view="New Composite Content View" \  
--component-ids=2
```

## Creating a filter

If only using Content Views as snapshots, Filters are unnecessary. If the desire is to filter what content make it into the view, such as blacklisting a package by name or version, or blacklisting errata by date or type, Filters can help accomplish these tasks.

To create a new Content View Filter using the web UI, navigate to:

Content > Content Views > Select the desired Content View > Content (within sub navigation) > Filters > New Filter

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content views - Monitor - Content - Hosts - Configure - Infrastructure

## Content Views

Search... Showing 4 of 4 (4 Total) 0 Selected | Deselect All | Create New View

- Name
- COMPOSITE
- New Content View >**
- Puppet Modules
- Yum Repos

### New Content View

Publish New Version | Close

Versions Content Puppet Modules History Details Tasks

#### Filters

Search... Showing 0 of 0 (0 Total) 0 Selected | Deselect All | New Filter | Remove Filters

You currently don't have any Filters included in this Content View, you can add a new Filter by using the button on the right.

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## Content Views

Search... Showing 4 of 4 (4 Total) 0 Selected | Deselect All | Create New View

- Name
- COMPOSITE
- New Content View >**
- Puppet Modules
- Yum Repos

### New Content View

Publish New Version | Close

Versions Content Puppet Modules History Details Tasks

< Filters List

#### Add New Filter

Name\* New Filter

Content Type\* Package

Type\* Exclude

Description Here is my new filter

Cancel Save

From the CLI, adding a Content View Filter:

```
hammer content-view filter create \
  --organization="Default Organization" \
  --content-view="New Content View" \
  --name="New Filter" \
  --inclusion=false \
  --type=rpm
```

From the CLI, adding a Content View Filter rule:

```
hammer content-view filter rule create \
  --organization="Default Organization" \
  --content-view="New Content View" \
  --content-view-filter="New Filter" \
  --name="something-else" \
  --max-version="10.0.0" \
  --min-version="10.0.0"
```

## Selecting which Repositories to Filter

By default a Filter applies to all repositories (present and future) in the Content View. It's possible to select which repositories within the Content View apply to the filter. This is useful, for example, if the desire is to exclude errata from only certain repositories in a view.

To select which repositories to Filter in the web UI, navigate to:

Content > Content Views > Select the desired Content View > Content (within sub navigation) > Filters > Select the desired Filter > Affected repositories (within sub navigation)

The screenshot shows the 'New Content View' configuration page in the Foreman web UI. The page is titled 'New Content View' and has a 'Publish New Version' button in the top right corner. The main content area is divided into several sections:

- Filters / New Filter:** A section for configuring filters, currently showing 'Affected repositories'.
- New Filter (Exclude Packages):** A section for configuring filters, currently showing 'Affected repositories'.
- Table of Affected Products:** A table with columns: Affected?, Name, Product, Type, Sync Status, and Content. It lists two products: 'Red Hat Enterprise Linux 6 Server RPMs x86\_64 6Server' and 'Red Hat Enterprise Linux 6 Server - Supplementary RPMs i386 6Server'.

From the CLI, adding a Content View Filter:

```
hammer content-view filter update \
--organization="Default Organization" \
--name="New Filter" \
--repository-ids=2,3,7
```

## Publishing a Content View

Publishing a Content View produces a new version of the content view that is subsequently promoted to the Library lifecycle environment. This newly published version of the content view is now available to any content host registered to Library.

To publish a Content View, in the web UI, navigate to:

Content > Content Views > Select the desired Content View > Publish New Version

The screenshot shows the 'Publish New Version' dialog in the Foreman web UI. The dialog is titled 'Publish New Version' and has a 'Publish New Version' button in the top right corner. The main content area is divided into several sections:

- Publish New Version:** A section for publishing a new version, with a description: 'A new version of New Content View and promoted to the Library environment. It can be promoted to other environments from the Versions tab of this Content View.'
- Version Details:** A section for entering version details, including a 'Version' field set to '1' and a 'Comment' field with the text 'Initial version'.

Content Views

Showing 4 of 4 (4 Total)

0 Selected | Deselect All | Create New View

Filter

Version	Status	Environments	Content	Author	Actions
Version 1	<span style="color: green;">Publishing and promoting to 1 environment.</span>	• Library	0 Packages Errata (▲) (✖) (🔍)		Promote

From the CLI:

```
hammer content-view publish \
--organization="Default Organization" \
--name="New Content View"
```

## Registering a Content Host

To register a Content Host that is not currently registered to the Content View, simply use subscription manager on the client Content Host and run:

```
subscription-manager register --org=ACME_Corporation --environment=Library/my_rhel_view
```

This would register the Content Host to the Library environment and the my\_rhel\_view Content View.

If the Content Host is already registered, from the UI:

Hosts > Content Hosts > Select the desired Content Host

The screenshot shows the Foreman web interface for a system named 'dhcp129-211.rdu.redhat.com'. The interface is organized into several sections:

- Basic Information:** Name (dhcp129-211.rdu.redhat.com), UUID (e1ee500b-be85-4f34-afa6-16f62a859756), Description (Initial Registration Params), and Type (Guest).
- Subscriptions:** Subscription Status (valid), Auto-Attach, Service Level, and Activation Keys (None).
- System Properties:** OS (Red Hat Enterprise Linux Server), Release (2.6.32-431.el6.x86\_64), Arch (x86\_64), Number of CPUs (1), Sockets (1), and Cores per Socket (1).
- System Content:** Release Version and Content View (Yum Repos).
- Environment:** Library (selected), test, and prod.
- System Status:** Registered (4/9/14 2:59 PM) and Checkin (4/15/14 12:08 PM).
- Networking:** Hostname (dhcp129-211.rdu.redhat.com), IPv4 Address (10.13.129.211), IPv6 Address (::1), and Interfaces (eth0, lo).

From the CLI:

```
hammer content-host update \
--organization="Default Organization" \
--name="dhcp129-211.rdu.redhat.com" \
--content-view="New Content View" \
--lifecycle-environment="Library"
```

## Promoting a Content View

Initially a Content View is published to Library as version 1. If there are Content Hosts in other environments that would like to consume this Content View, a version of the content view will need to be promoted to those environments. For example, given the Content View "New Content View", version 1 of which has been promoted to the Dev environment. Any Content Hosts in Dev attached to the Content View would remain at version 1 until a version 2 is both published and promoted to the Dev environment.

To promote a Content View in the Web UI, navigate to:

Content > Content Views > Select the desired Content View > Versions (within sub navigation) > Click promote for desired version

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### Content Views

Search... Showing 4 of 4 (4 Total) 0 Selected | Deselect All | Create New View

- Name
- COMPOSITE
- New Content View >**
- Puppet Modules
- Yum Repos

#### New Content View

[Publish New Version](#) [Close](#)

[Versions](#) [Content](#) [Puppet Modules](#) [History](#) [Details](#) [Tasks](#)

Filter

Version	Status	Environments	Content	Author	Actions
Version 1	Published. (4/15/14 3:57 PM)	• Library	487 Packages 112 Errata (▲ 44 ✖ 13 📄 55)		<a href="#">Promote</a>

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### Content Views

Search... Showing 4 of 4 (4 Total) 0 Selected | Deselect All | Create New View

- Name
- COMPOSITE
- New Content View >**
- Puppet Modules
- Yum Repos

#### New Content View

[Publish New Version](#) [Close](#)

[Versions](#) [Content](#) [Puppet Modules](#) [History](#) [Details](#) [Tasks](#)

[Back to Version List](#)

#### Promote Version 1

Choose one or more lifecycle environments from the existing promotion paths available in 'walden'.

Library  test  prod

[Promote Version](#) [Cancel](#)

FOREMAN Admin User

content views Monitor Content Hosts Configure Infrastructure

## Content Views

Search... Showing 4 of 4 (4 Total) 0 Selected | Deselect All | Create New View

- Name
- COMPOSITE
- New Content View >**
- Puppet Modules
- Yum Repos

### New Content View

Successfully initiated promotion of New Content View version 1 to test.

Filter

Version	Status	Environments	Content	Author	Actions
Version 1	<span style="background-color: green; color: white;">Promoting to 1 environment.</span>	<ul style="list-style-type: none"> <li>Library</li> <li>test</li> </ul>	0 Packages 0 Errata (▲ 0 🛑 0 📄 0)		Promote

To promote a Content View in the CLI:

```
hammer content-view version promote \
--organization="Default Organization" \
--content-view="New Content View" \
--to-lifecycle-environment="Test" \
--version 1
```

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## Katello Inter-Server Sync

NOTE: This feature is intended to replace the 'katello-disconnected' script.

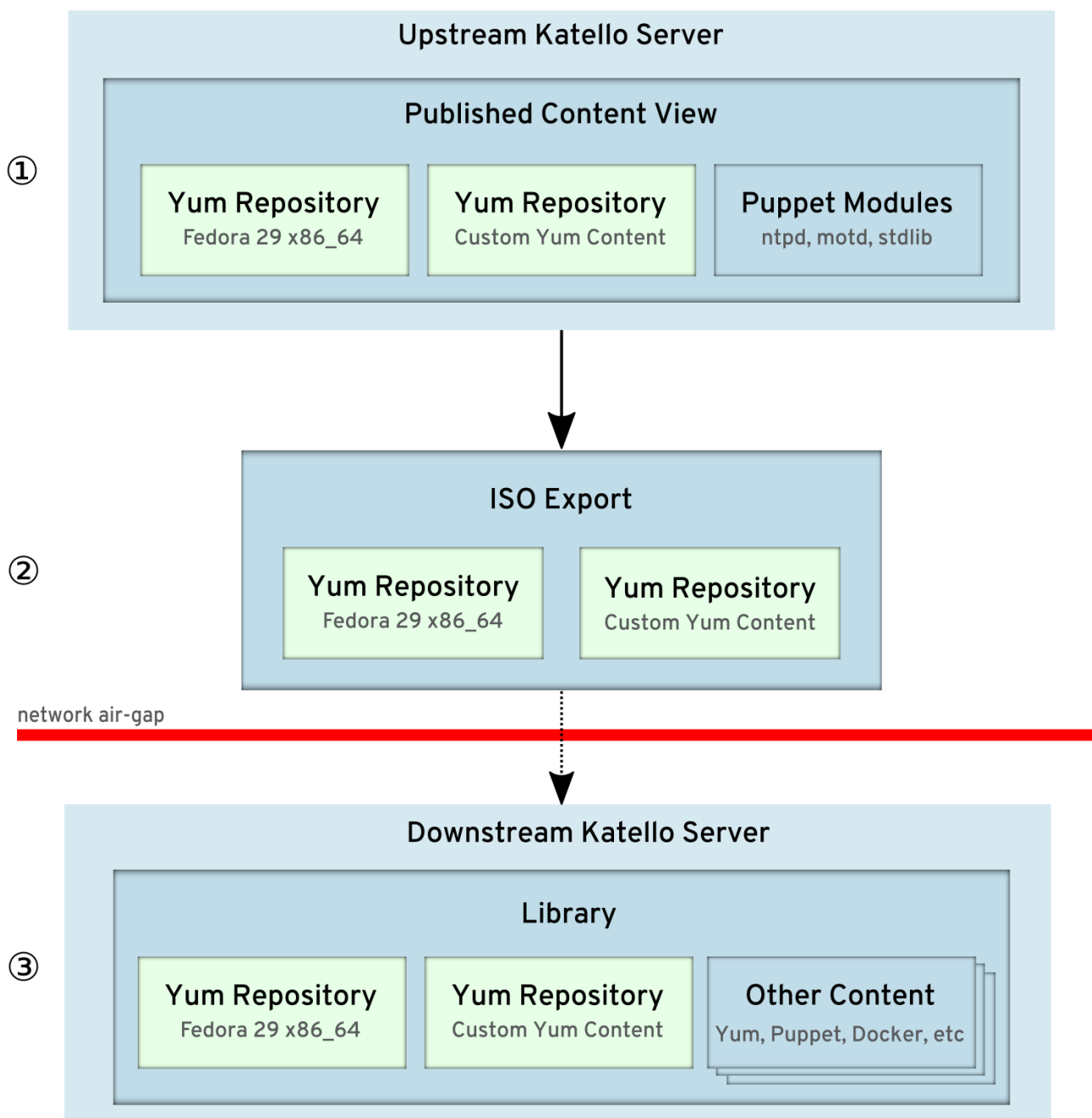
### Intro

If you are working in an air-gapped network environment where some of your Katello servers do not have Internet connectivity, you may be interested in using the Katello Inter-Server Sync (ISS) feature. This allows you to export repos, including repos in content views, on your “upstream” Katello server, and then import said repos into your “downstream” server that does not have connectivity. Individual repos can be exported, or all of the repos in a content view.

List of currently supported repo content types:

- yum

Future releases will enable support for additional content types.



The diagram above shows an example scenario where a user wants to export all Yum content in a content view and then import to another Katello server. The ISO file is burned to media and then walked across the air-gap in the network.

## Detailed Operation

### Exporting

The ISS feature allows users to move Yum content from one Katello server to another, in a way that is compatible with air-gapped networks. Typically users will set up an upstream server that is connected to the Internet, and then create a content view that contains Yum content that they would like to present to the downstream server (step 1).

Content is exported via either `hammer repository export` or `hammer content-view version export` (step 2). It is exported to the location set in “pulp\_export\_destination” in the Settings page, under the Katello tab. This must be set by the user prior to the

first export or else an error will be raised. Please be aware that the location needs to be readable and writable by the `foreman` user.

You can select to either export as a plain set of directories, or as a set of ISO files. The `"iso_size_mb"` parameter sets how large you would like each ISO file to be. It defaults to 4380 MB, which is the size of a single-side, single-layer DVD.

## Importing

Importing (step 3) can be done in one of two ways. The first way is to make the export available via HTTP to the importing Satellite instance. Simply put the export in `/var/www/pub/export`. After that, edit your CDN location from the manifest import page to point to `"http://localhost/export/path/to/export"` and the Red Hat Repos page will then work as expected, using your exported data.

The second way is to perform a repository sync via hammer, specifying the source location. Please see the `hammer repository sync` command for more information. This method is the only way to import custom content, and is the only way to import incremental content.

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## Docker Management

Katello can be used to manage and deploy [Docker](#) content. Katello can retrieve Docker content from a variety of sources such as Docker hub, private Docker registries, the Red Hat CDN, and so forth. Docker content can then be published and promoted via [Content Views](#) and then pulled or provisioned to a server running Docker.

# What is Docker?

Docker is a tool used to manage Linux containers. To read more about Docker, [check out the official Docker site](#). Docker repositories, which contain images and tags, can be retrieved, stored, managed, and deployed from Katello.

## How to sync a Docker repository

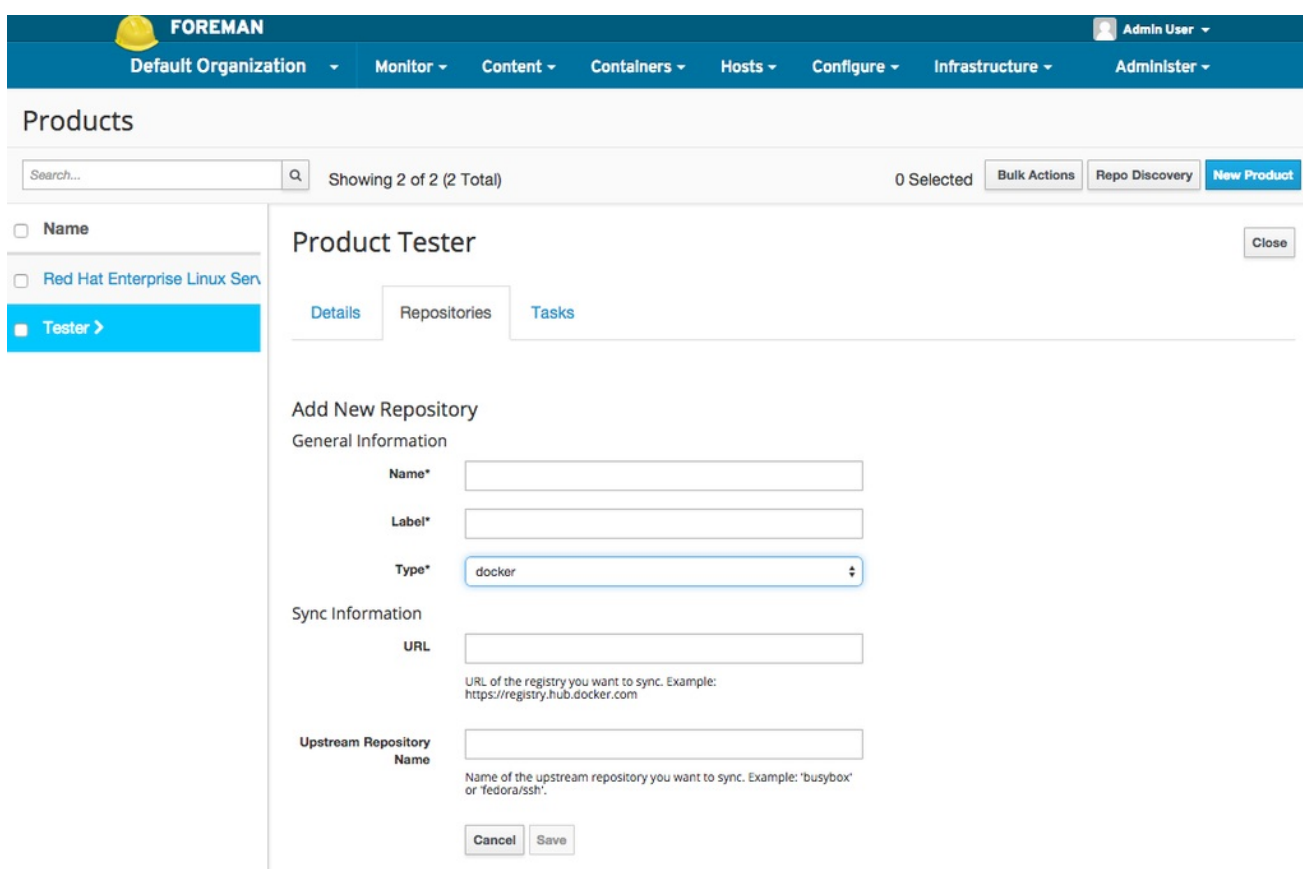
The easiest way to get Docker content into Katello is to sync it in. You can either sync Docker content from the Red Hat CDN (if you have subscriptions for the content) or from a registry such as Docker Hub.

## Red Hat Docker Images

Content can be synced into Katello using a Red Hat manifest in much the same way as yum content. See [our guide on how to manage Red Hat content for more information](#).

## Docker Hub/Docker Registry

To sync content from a Docker registry such as Docker Hub (which is the official Docker-run registry), simply start by creating a new Repository.



The screenshot shows the Foreman web interface. At the top, there is a navigation bar with the 'FOREMAN' logo and a user profile 'Admin User'. Below the navigation bar, there are several menu items: 'Default Organization', 'Monitor', 'Content', 'Containers', 'Hosts', 'Configure', 'Infrastructure', and 'Administer'. The main content area is titled 'Products' and shows a search bar, a 'Showing 2 of 2 (2 Total)' indicator, and buttons for '0 Selected', 'Bulk Actions', 'Repo Discovery', and 'New Product'. A sidebar on the left lists products: 'Name', 'Red Hat Enterprise Linux Ser...', and 'Tester >'. The main content area is titled 'Product Tester' and has tabs for 'Details', 'Repositories', and 'Tasks'. The 'Add New Repository' form is displayed, with the following fields:

- General Information**
  - Name\* (text input)
  - Label\* (text input)
  - Type\* (dropdown menu with 'docker' selected)
- Sync Information**
  - URL (text input)
  - URL of the registry you want to sync. Example: `https://registry.hub.docker.com`
  - Upstream Repository Name (text input)
  - Name of the upstream repository you want to sync. Example: 'busybox' or 'fedora/ssh'.

At the bottom of the form, there are 'Cancel' and 'Save' buttons.

On the new Repository screen, select “Docker” as the content type. Once you do that, you’ll be given two options: upstream name and URL. The URL will be the registry URL; for Docker Hub, this would be <https://registry.hub.docker.com>.

For the upstream name, you want to use the fully qualified upstream name which also includes any namespace such as the username. This can be just “busybox” if the Repository is an official Docker Hub Repository or it can be something like “fedora/ssh” where “fedora” is the username/namespace.

Then click save and then sync the Repository as you normally would. Katello will fetch all the images and tags contained within that Repository.

## How to Upload Docker Images

In versions of Katello prior to 3.0, Docker images could be uploaded directly via either the UI or CLI. However, Katello 3.0 only supports the Docker Registry v2 format, which is significantly different than the Docker Registry v1 format. The `docker save` command outputs a Docker image in v1 format, which cannot be uploaded directly to a v2 repository.

As a workaround, you can create a local Docker registry like so:

```
docker run -p 5030:5000 --name registry registry:2
```

Note the :2 above, which specifies a v2 registry. Push your changes to your newly created local registry then follow the instructions in the section above to sync this registry to Katello. This will ensure that your Docker content stays in Docker's v2 registry format.

# How to Publish and Promote Docker Content

Docker content can be published and promoted via Content Views much like yum or puppet content.

The screenshot shows the Foreman web interface for managing Content Views. The top navigation bar includes 'Default Organization', 'Monitor', 'Content', 'Containers', 'Hosts', 'Configure', 'Infrastructure', and 'Administer'. The 'Content' menu is expanded, showing 'Content Views'. The 'Test' Content View is selected, and the 'Docker Content' tab is active. The 'Repository Selection' section shows a table of repositories with columns for Name, Product, Last Sync, Sync State, and Content.

Name	Product	Last Sync	Sync State	Content
<input type="checkbox"/> business	Tester	N/A	N/A	
<input type="checkbox"/> busybox	Tester	2/2/15 1:18 PM	Success	10 Docker Images 5 Docker Tags
<input type="checkbox"/> redis	Tester	1/19/15 5:10 PM	Success	179 Docker Images 19 Docker Tags
<input type="checkbox"/> tester	Tester	2/17/15 3:40 PM	Success	12 Docker Images 1 Docker Tags
<input type="checkbox"/> wat	Tester			

After creating a Content View, visit the Docker Content tab. Here you can select any Docker repositories you want to add to your Content View. After you've added Docker Repositories to your view, you may proceed as normal. Visit [the Content View user guide for more information](#).

# How to View and Pull Docker Content

To view Docker content contained with Katello, visit the Docker Tags page. This can be accessed under the Content menu at the top of any page.

FOREMAN			Admin User
Default Organization	Monitor	Content	Administer
<b>Docker Tags</b>			
<input type="text" value="Search..."/>	Showing 25 of 25 (25 Total)		
Name	Product Name	Repository Name	
2.8.14	Tester	redis	
2.8.15	Tester	redis	
2.8.16	Tester	redis	
2.8.17	Tester	redis	
2.8.18	Tester	redis	
2.8.19	Tester	redis	
2.8.6	Tester	redis	
2.8.7	Tester	redis	
2.8.8	Tester	redis	
2.8.9	Tester	redis	
buildroot-2013.08.1	Tester	busybox	
buildroot-2014.02	Tester	busybox	
latest	Tester	tester	
latest	Tester	redis	
latest	Tester	busybox	
ubuntu-12.04	Tester	busybox	
ubuntu-14.04	Tester	busybox	

On the Docker Tags page, you can see a list of Docker Tags grouped by Repository in Katello. This shows you Tags grouped across Content Views and Lifecycle Environments. Suppose I wanted to pull the latest Tag from my redis repository, I would click the latest row for my redis repository.

FOREMAN Admin User

Default Organization Monitor Content Containers Hosts Configure Infrastructure Administer

## Docker Tags

Search... Showing 25 of 25 (25 Total)

**Name**

- redis:2.8.14
- redis:2.8.15
- redis:2.8.16
- redis:2.8.17
- redis:2.8.18
- redis:2.8.19
- redis:2.8.6
- redis:2.8.7
- redis:2.8.8
- redis:2.8.9
- busybox:buildroot-2013.08.1
- busybox:buildroot-2014.02
- tester:latest
- redis:latest**
- busybox:latest
- busybox:ubuntu-12.04
- busybox:ubuntu-14.04

**redis:latest** Close

Basic Information

**Product** Tester

**Repository** redis

Environment	Content View Version	Image	Published At
Library	Default Organization View 1.0	3b7234aa3098129352dc...	localhost:5000/default_organization-tester-redis:latest
Library	redisv 3.0	3b7234aa3098129352dc...	localhost:5000/default_organization-library-redisv-Tester-redis:latest

I can see here that my redis Repository has been added to a published Content View called redisv. If I want to use the tag from that Content View, I would just copy the Published At URL and then on my docker server I would run:

```
$ docker pull localhost:5000/default_organization-library-redisv-Tester-redis:latest
Pulling repository localhost:5000/default_organization-library-redisv-Tester-redis...
```

## How to Provision Docker Content

See how to provision content in the documentation in the [foreman-docker documentation](#). Provisioning content from Katello works in much the same way.

First, proceed to the new Container page by accessing it from the Containers menu at the top. Then, select the Local Content tab on the second step. This will allow you to select a Docker image from a published Katello repository which is in an environment/content view/capsule. Then just proceed in the wizard as per the Foreman Docker instructions. When you are finished, you should have a new container running from an image in Katello.

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## Email Notifications

### Types of Email Notifications

In addition to the Email Notifications that Foreman provides:

- Puppet run summary (Daily/Weekly/Monthly)
- Puppet errors

Katello provides a few addition reports:

- Katello Host Advisory (Daily/Weekly/Monthly) - A report of all of the Errata applicable to all readable Content Hosts
- Katello Promote Errata - A report generated at Content View promotion time showing what Errata applicable to the Content Hosts within that Content View.
- Katello Sync Errata - A report generated after each Repository sync listing new Errata synced and how many Content Hosts are applicable.

## Configuring the Foreman/Katello to send emails:

The configuration on how the Foreman/Katello service sends email is located in `/etc/foreman/email.yml`:

```
production:
  delivery_method: :smtp
  smtp_settings:
    address: smtp.example.com
    port: 25
    domain: example.com
    authentication: :none
```

For more information see: [Email Configuration](#)

## Opting in to the emails

By default a user will receive no email notifications. Each notification must be opted into.

To opt in for your own user, at the very top right of the web interface, hover over your Username, click “My Account” and then click the “Mail Preferences” tab.

To opt in for other users, navigate to “Administer” > “Users” > Click the desired User > click the “Mail Preferences” tab.

Select which emails and frequency you would like the user to have and click “Submit”.



### Edit User

Notification	Frequency	Description
Katello host advisory	Weekly	A summary of available and applicable errata for your hosts
Katello promote errata	Subscribe	A post-promotion summary of hosts with available errata
Katello sync errata	Subscribe	A summary of new errata after a repository is synchronized
Puppet error state	No emails	A notification when a host reports a puppet error
Puppet summary	Weekly	A summary of eventful puppet reports

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## 6. Troubleshooting

## Errata

Errata are updates between major releases. An Erratum is metadata about a group of packages that explains the importance of the package updates. Errata may be released individually on an as-needed basis or aggregated as a minor release. There are three main types of errata:

- Enhancement: the new packages contain one or more added features

- Bugfix: the new packages contain one or more bug fixes
- Security: the new packages fix one or more security vulnerabilities

With regard to Content Hosts, Errata is divided into two distinct classifications depending on whether or not the Errata is present in the Content Host's Lifecycle Environment and Content View:

- Applicable: the errata applies to one or more Content Hosts
- Installable: the errata applies to one or more Content Hosts and is present in the Content Host's Lifecycle Environment and Content View

## Definitions

- [Content Host](#)
- [Content View](#)
- [Lifecycle Environment](#)

## General Features

The following is a high-level summary of the Errata features:

- [View List of Errata](#)
- [View Errata Details](#)
- [View Affected Content Hosts](#)
- [View Repositories Containing Errata](#)
- [Applying Errata](#)

## View List of Errata

To view the list of Errata in the Organization:

- navigate to: Content > Errata

The screenshot shows the Foreman web interface for the 'Errata' section. The top navigation bar includes 'FOREMAN', 'Default Organization', 'Monitor', 'Content', 'Containers', 'Hosts', 'Configure', 'Infrastructure', 'Admin User', and 'Administer'. Below the navigation is a search bar and a status indicator 'Showing 40 of 2809 (2809 Total)'. The main content is a table of errata with the following columns: Errata ID, Title, Type, Affected Content Hosts, and Updated. The table lists various errata, including security advisories, bug fix advisories, and product enhancement advisories. The errata with ID 'RHSA-2014:1948' is highlighted in blue.

Errata ID	Title	Type	Affected Content Hosts	Updated
<input type="checkbox"/> RHSA-2014:1984	Important: bind security update	▲ Security Advisory - Important	0	12/11/14
<input type="checkbox"/> RHSA-2014:1983	Important: xorg-x11-server security update	▲ Security Advisory - Important	0	12/10/14
<input type="checkbox"/> RHBA-2014:1970	dovecot bug fix update	⚙ Bug Fix Advisory	0	12/8/14
<input type="checkbox"/> RHSA-2014:1974	Important: rpm security update	▲ Security Advisory - Important	0	12/8/14
<input type="checkbox"/> RHBA-2014:1964	selinux-policy bug fix update	⚙ Bug Fix Advisory	0	12/7/14
<input type="checkbox"/> RHBA-2014:1965	curl bug fix update	⚙ Bug Fix Advisory	0	12/7/14
<input type="checkbox"/> RHBA-2014:1967	sssd bug fix update	⚙ Bug Fix Advisory	0	12/7/14
<input type="checkbox"/> RHBA-2014:1961	system-config-firewall bug fix update	⚙ Bug Fix Advisory	0	12/4/14
<input type="checkbox"/> RHSA-2014:1919	Critical: firefox security update	▲ Security Advisory - Critical	0	12/1/14
<input checked="" type="checkbox"/> RHSA-2014:1948	Important: nss, nss-util, and nss-softokn security, bug fix, and enhancement update	▲ Security Advisory - Important	0	12/1/14
<input type="checkbox"/> RHEA-2014:1918	oprofile enhancement update	📦 Product Enhancement Advisory	0	11/30/14
<input type="checkbox"/> RHBA-2014:1909	lvm2 bug fix update	⚙ Bug Fix Advisory	0	11/25/14
<input type="checkbox"/> RHSA-2014:1911	Moderate: ruby security update	▲ Security Advisory - Moderate	0	11/25/14
<input type="checkbox"/> RHBA-2014:1886	mdadm bug fix update	⚙ Bug Fix Advisory	0	11/23/14
<input type="checkbox"/> RHBA-2014:1884	cyrus-sasl bug fix update	⚙ Bug Fix Advisory	0	11/19/14
<input type="checkbox"/> RHBA-2014:1883	webkitgtk and gimp bug fix update	⚙ Bug Fix Advisory	0	11/19/14
<input type="checkbox"/> RHBA-2014:1875	device-mapper-multipath bug fix update	⚙ Bug Fix Advisory	1	11/18/14
<input type="checkbox"/> RHBA-2014:1867	nss-softokn bug fix update	⚙ Bug Fix Advisory	0	11/17/14
<input type="checkbox"/> RHEA-2014:1869	new packages: kmod-oracleasm	📦 Product Enhancement Advisory	0	11/19/14

## View Errata Details

To view the details of an Errata:

- navigate to: Content > Errata
- Click on an Errata ID

**FOREMAN** Admin User - Default Organization - Monitor - Content - Containers - Hosts - Configure - Infrastructure - Administrator

### Errata

Showing 40 of 2809 (2809 Total) 0 Selected + Apply Errata

- Errata ID
- RHSA-2014:1984
- RHSA-2014:1983
- RHBA-2014:1970
- RHSA-2014:1974
- RHBA-2014:1964
- RHBA-2014:1965
- RHBA-2014:1967
- RHBA-2014:1961
- RHSA-2014:1919
- RHSA-2014:1948 >**
- RHEA-2014:1918
- RHBA-2014:1909
- RHSA-2014:1911
- RHBA-2014:1886
- RHBA-2014:1884
- RHBA-2014:1883
- RHBA-2014:1875
- RHBA-2014:1867
- RHEA-2014:1869
- RHSA-2014:1870

#### Important: nss, nss-util, and nss-softokn security, bug fix, and enhancement update

**Details** Content Hosts Repositories

**Advisory** RHSA-2014:1948

**CVEs**

**Type** Security Advisory

**Severity** Important

**Issued** 12/1/14

**Last Updated On** 12/1/14

**Reboot Suggested?** No

**Topic**

Updated nss, nss-util, and nss-softokn packages that contain a patch to mitigate the CVE-2014-3566 issue, fix a number of bugs, and add various enhancements are now available for Red Hat Enterprise Linux 5, 6, and 7.

Red Hat Product Security has rated this update as having Important security impact.

**Description**

Network Security Services (NSS) is a set of libraries designed to support the cross-platform development of security-enabled client and server applications. Netscape Portable Runtime (NSPR) provides platform independence for non-GUI operating system facilities.

This update adds support for the TLS Fallback Signaling Cipher Suite Value (TLS\_FALLBACK\_SCSV), which can be used to prevent protocol downgrade attacks against applications which re-connect using a lower SSL/TLS protocol version when the initial connection indicating the highest supported protocol version fails.

This can prevent a forceful downgrade of the communication to SSL 3.0. The SSL 3.0 protocol was found to be vulnerable to the padding oracle attack when using block cipher suites in cipher block chaining (CBC) mode. This issue is identified as CVE-2014-3566, and also known under the alias POODLE. This SSL 3.0 protocol flaw will not be addressed in a future update; it is recommended that users configure their applications to require at least TLS protocol version 1.0 for secure communication.

## View Affected Content Hosts

To view the Affected Content Hosts of an Errata:

- navigate to: Content > Errata
- Click on an Errata ID
- Click on the Content Hosts Tab

Note the following option:

- Checking the box limits the display of Content Hosts to those which already have the Errata available in their Lifecycle Environment and Content View.

**FOREMAN** Admin User - Default Organization - Monitor - Content - Containers - Hosts - Configure - Infrastructure - Administrator

### Errata

Showing 40 of 2809 (2809 Total) 0 Selected + Apply Errata

- Errata ID
- RHSA-2014:1984
- RHSA-2014:1983
- RHBA-2014:1970
- RHSA-2014:1974
- RHBA-2014:1964
- RHBA-2014:1965
- RHBA-2014:1967
- RHBA-2014:1961
- RHSA-2014:1919
- RHSA-2014:1948 >**
- RHEA-2014:1918
- RHBA-2014:1909
- RHSA-2014:1911
- RHBA-2014:1886
- RHBA-2014:1884
- RHBA-2014:1883
- RHBA-2014:1875
- RHBA-2014:1867
- RHEA-2014:1869
- RHSA-2014:1870

#### Important: nss, nss-util, and nss-softokn security, bug fix, and enhancement update

**Details** **Content Hosts** Repositories

**Apply To Content Hosts**

Only show content hosts where Important: nss, nss-util, and nss-softokn security, bug fix, and enhancement update is currently available in the host's Lifecycle Environment.

Filter by Environment

Search... Showing 1 of 1 (1 Total) 0 Selected + Apply to Hosts

<input type="checkbox"/>	Name	OS	Environment	Content View
<input type="checkbox"/>	walden-rhel7.rdu.redhat.com	Red Hat Enterprise Linux Server 7.0	Library	CV

# View Repositories Containing Errata

To view the Repositories Containing an Errata:

- navigate to: Content > Errata
- Click on an Errata ID
- Click on the Repositories Tab

Note that you can filter by Lifecycle Environment and Content View.

The screenshot shows the Foreman web interface. The top navigation bar includes 'FOREMAN', 'Default Organization', 'Monitor', 'Content', 'Containers', 'Hosts', 'Configure', and 'Infrastructure'. The user is logged in as 'Admin User'. The main content area is titled 'Errata' and shows a search bar, a list of Errata IDs on the left, and a detailed view for 'RHSA-2014:1948'. The detailed view includes a title, tabs for 'Details', 'Content Hosts', and 'Repositories', and a table of repositories containing the errata.

Name	Product	Content View	Last Sync
RHEL6	Red Hat		Success 20 days ago

## Applying Errata

How Errata is applied to a Content Host(s) depends on whether the Errata is installable.

- If the Errata is already installable then the Errata is applied to the Content Host(s).
- If the Errata is not installable then an Incremental Update is generated. An Incremental Update creates a point release of the Content View with the Errata included. The Errata can also be applied to the Content Host(s) as part of this process.

There are two ways to apply Errata:

- A single Errata can be applied to one or more Content Hosts
- Several Errata can be applied to one or more Content Hosts via a bulk operation

## Applying a Single Errata

To apply a single Errata:

- Navigate to: Content > Errata
- Click on an Errata ID
- Click on the Content Host tab
- Select the desired Content Hosts
- Click "Apply to Hosts"
- Confirm the action



**FOREMAN** Admin User

Default Organization Monitor Content Containers Hosts Configure Infrastructure Administrator

### Errata

All Repositories  Applicable  Installable

Search... Showing 19 of 19 (19 Total) 1 Selected **Apply Errata**

**Errata ID**

- RHSA-2014:1948**
- RHBA-2014:1875
- RHEA-2014:1866
- RHEA-2014:1733
- RHBA-2014:1637
- RHBA-2014:1515
- RHBA-2014:1426
- RHBA-2014:1378
- RHBA-2014:1376
- RHEA-2014:1472
- RHEA-2014:1532
- RHEA-2014:1530
- RHBA-2014:1384
- RHBA-2014:1555
- RHBA-2014:1459
- RHBA-2014:1590
- RHEA-2014:1500
- RHBA-2014:1362

**Important: nss, nss-util, and nss-softokn security, bug fix, and enhancement update** **Close**

Details **Content Hosts** Repositories

**Apply To Content Hosts**

Only show content hosts where Important: nss, nss-util, and nss-softokn security, bug fix, and enhancement update is currently available in the host's Lifecycle Environment.

Filter by Environment

Search... Showing 1 of 1 (1 Total) 1 Selected **Apply to Hosts**

Name	OS	Environment	Content View
<input checked="" type="checkbox"/> walden-rhel7.rdu.redhat.com	Red Hat Enterprise Linux Server 7.0	dev	RHEL

**FOREMAN** Admin User

Default Organization Monitor Content Containers Hosts Configure Infrastructure Administrator

### Errata

All Repositories  Applicable  Installable

Search... Showing 19 of 19 (19 Total) 1 Selected **Apply Errata**

**Errata ID**

- RHSA-2014:1948**
- RHBA-2014:1875
- RHEA-2014:1866
- RHEA-2014:1733
- RHBA-2014:1637
- RHBA-2014:1515
- RHBA-2014:1426
- RHBA-2014:1378
- RHBA-2014:1376
- RHEA-2014:1472
- RHEA-2014:1532
- RHEA-2014:1530
- RHBA-2014:1384
- RHBA-2014:1555
- RHBA-2014:1459
- RHBA-2014:1590
- RHEA-2014:1500
- RHBA-2014:1362

**Important: nss, nss-util, and nss-softokn security, bug fix, and enhancement update** **Close**

Details **Content Hosts** Repositories

Errata List > Select Content Hosts > Confirm

**Apply RHSA-2014:1948**

These Errata are not Installable via your published Content View versions running on the selected hosts. The new Content View Versions (specified below) will be created which will make this Errata Installable in the host's Environment. This new version will replace the current version in your host's Lifecycle Environment. To install these errata immediately on hosts after publishing check the box below.

Content View	Version	Environment	Host Count
RHEL	2.1	dev	1

Apply Errata to Content Hosts immediately after publishing.

**Cancel Confirm**

## Applying Several Errata

To apply several Errata:

- Navigate to: Content > Errata
- Select the desired Errata
- Click "Apply Errata"
- Select the intended Content Hosts
- Click "Next"
- Confirm the action

### Errata

All Repositories  Applicable  Installable

Search... Showing 19 of 19 (19 Total) 1 Selected [Apply Errata](#)

Errata ID	Title	Type	Content Host Counts	Updated
<input checked="" type="checkbox"/> <a href="#">RHSA-2014:1948</a>	Important: nss, nss-util, and nss-softokn security, bug fix, and enhancement update	Security Advisory - Important	1 Applicable, 0 Installable	12/1/14
<input type="checkbox"/> <a href="#">RHBA-2014:1875</a>	device-mapper-multipath bug fix update	Bug Fix Advisory	1 Applicable, 1 Installable	11/18/14
<input type="checkbox"/> <a href="#">RHEA-2014:1866</a>	tzdata enhancement update	Product Enhancement Advisory	1 Applicable, 1 Installable	11/16/14
<input type="checkbox"/> <a href="#">RHEA-2014:1733</a>	tzdata enhancement update	Product Enhancement Advisory	1 Applicable, 1 Installable	10/28/14
<input type="checkbox"/> <a href="#">RHBA-2014:1637</a>	at bug fix update	Bug Fix Advisory	1 Applicable, 1 Installable	10/14/14
<input type="checkbox"/> <a href="#">RHBA-2014:1515</a>	audit bug fix and enhancement update	Bug Fix Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> <a href="#">RHBA-2014:1426</a>	openldap bug fix and enhancement update	Bug Fix Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> <a href="#">RHBA-2014:1378</a>	nss bugfix and enhancement update	Bug Fix Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> <a href="#">RHBA-2014:1376</a>	xcb-util, xorg-x11-drivers, and mesa bug fix and enhancement update	Bug Fix Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> <a href="#">RHEA-2014:1472</a>	elfutils bug fix and enhancement update	Product Enhancement Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> <a href="#">RHEA-2014:1532</a>	libnl3 enhancement update	Product Enhancement Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> <a href="#">RHEA-2014:1530</a>	new packages: json-c	Product Enhancement Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> <a href="#">RHBA-2014:1384</a>	subscription-manager bug fix and	Bug Fix Advisory	1 Applicable, 1 Installable	10/13/14

### Errata

All Repositories  Applicable  Installable

Search... Showing 19 of 19 (19 Total) 1 Selected [Apply Errata](#)

- [RHSA-2014:1948](#)
- [RHBA-2014:1875](#)
- [RHEA-2014:1866](#)
- [RHEA-2014:1733](#)
- [RHBA-2014:1637](#)
- [RHBA-2014:1515](#)
- [RHBA-2014:1426](#)
- [RHBA-2014:1378](#)
- [RHBA-2014:1376](#)
- [RHEA-2014:1472](#)
- [RHEA-2014:1532](#)
- [RHEA-2014:1530](#)
- [RHBA-2014:1384](#)
- [RHBA-2014:1555](#)
- [RHBA-2014:1459](#)
- [RHBA-2014:1590](#)
- [RHEA-2014:1500](#)
- [RHBA-2014:1362](#)

#### Apply Errata Close

Errata List > Select Content Hosts

Only show content hosts where is currently available in the host's Lifecycle Environment.

Filter by Environment

Search... Showing 1 of 1 (1 Total) 1 Selected

Name	OS	Environment	Content View
<input checked="" type="checkbox"/> walden-rhel7.rdu.redhat.com	Red Hat Enterprise Linux Server 7.0	dev	RHEL

[Cancel](#) [Next](#)

### Errata

All Repositories  Applicable  Installable  
Search... Showing 19 of 19 (19 Total) 1 Selected [Apply Errata](#)

- Errata ID
- RHSA-2014:1948
- RHBA-2014:1875
- RHEA-2014:1866
- RHEA-2014:1733
- RHBA-2014:1637
- RHBA-2014:1515
- RHBA-2014:1426
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- RHEA-2014:1532
- RHEA-2014:1530
- RHBA-2014:1384
- RHBA-2014:1555
- RHBA-2014:1459
- RHBA-2014:1590
- RHEA-2014:1500
- RHBA-2014:1362

#### Apply Errata Close

Errata List > Select Content Hosts > Confirm

These Errata are not Installable via your published Content View versions running on the selected hosts. The new Content View Versions (specified below) will be created which will make this Errata Installable in the host's Environment. This new version will replace the current version in your host's Lifecycle Environment. To install these errata immediately on hosts after publishing check the box below.

Content View	Version	Environment	Host Count
RHEL	2.1	dev	1

Apply Errata to Content Hosts immediately after publishing.

[Cancel](#) [Confirm](#)

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## 6. Troubleshooting

## Glossary

The following terms are used throughout this document, and are important for the users understanding of Katello.

### Activation Key

A registration token which can be used in a kickstart file to control actions at registration. These are similar to Activation Keys in Spacewalk, but they provide a subset of features because after registration, Puppet takes control of package and

configuration management.

### **Application Lifecycle Environment**

Steps in a promotion path through the Software (Development) Life Cycle (SDLC). Content (packages, puppet modules) can be moved through lifecycle environments via content view publishing/promotion. Traditionally these environments are things like Development -> Test -> Production. Channel cloning was used to implement this concept for this in Spacewalk.

### **Attach**

Associating a Subscription to a Host which provides access to RPM content.

### **Capsule**

An additional "server" that can be used in a Katello deployment to facilitate content federation and distribution in addition to other localized services (Puppet master, DHCP, DNS, TFTP, and more).

### **Change Set**

Set of packages and puppet modules which are promoted between Application Lifecycle Environments. Katello records the progress of changesets as they promoted. Katello also provides audit capabilities to review how environments have changed over time.

### **Compute Profile**

Default attributes for new virtual machines on a compute resource.

### **Compute Resource**

A virtual fabric, or cloud infrastructure, where hosts can be deployed by Katello. Examples include RHEV-M, OpenStack, EC2, and VMWare.

### **Content**

Software packages (RPMS), Package Groups, Errata, and Puppet modules. These are synced into the Library and then promoted into Lifecycle Environments via Content Views in order to be used/consumed by Hosts.

### **Content Delivery Network (CDN)**

The mechanism to deliver Red Hat content in a geographically co-located fashion. For example, content which is synced by a Katello in Europe will pull content from a source in Europe.

### **Content View**

A definition of content that combines products, packages, errata and Puppet modules, with capabilities for intelligent filtering and snapshotting. Content Views are a refinement of the combination of channels and cloning from Spacewalk.

### **External Node Classifier**

A Puppet construct that provides additional data for a Puppet master to be used for configuring Hosts. Foreman acts as an External Node Classifier to Puppet Masters in a Satellite deployment.

### **Facter**

A program that provides information (facts) about the system on which it is run (eg: total memory, operating system version, architecture, etc.) Facter facts can be used in Puppet modules in order to enable specific configurations based on Host data.

### **Hammer**

The command line tool for Katello. Hammer can be used as a standard cli (and used in scripts) and can also be used as a shell in the same way that spacecmd, virsh and others work.

### **Host**

A system, either physical or virtual, which is managed by Katello.

### **Host Group**

A template for how a Host should be built. This includes the content view (which defines the available RPMS and Puppet modules), and the Puppet classes to apply (which determines the ultimate software and configuration).

### **Location**

A collection of default settings which represent a physical place. These can be nested so that a user can set up defaults, for example, for Europe, which are refined by Tel Aviv, which are refined by DataCenter East, and then finally by Rack 22.

### **Library**

The Library is the single origin of all content which can be used. If you are an Information Technology Infrastructure Library (ITIL) shop, it is your definitive media library.

### **Manifest**

The means of transferring subscriptions from a Subscription Provider (such as the Red Hat Customer portal) to Katello. This is similar in function to certificates used with Spacewalk.

### **Organization**

A tenant in Katello. Organizations, or orgs, are isolated collections of hosts, content and other functionality within a Katello deployment.

### **Permission**

The ability to perform an action.

### **Product**

A collection of content repositories.

### **Promote**

The act of moving content from one Application Lifecycle Environment to another.

### **Provisioning Template**

User defined templates for Kickstarts, snippets and other provisioning actions. These provide similar functionality to Kickstart Profiles and Snippets in Katello.

### **Puppet Agent**

An agent that runs on a Host that applies configuration changes to that Host.

**Puppet Class**

A Puppet Class is re-usable named block of puppet manifest, similar to a class in an object-oriented programming language. Puppet classes must be included/instantiated in order to use their functionality. Puppet Classes can be parameterized - they can take parameters when they are included/instantiated and those parameters may be used by the underlying manifest to affect the ultimate configuration.

**Puppet Manifest**

A Manifest is a simple set of Puppet instructions. Manifests typically have the .pp extension. A manifest is much like a procedure in programming terms.

**Puppet Master**

A Capsule component that provides Puppet manifests to Hosts for execution by the Puppet Agent.

**Puppet Module**

A Puppet Module is a set of Puppet manifests/classes, template files, tests and other components packaged together in a specific directory format. Puppet Modules are typically associated with specific software (eg: NTP, Apache, etc) and contain various classes used to assist in the installation and configuration of that software. Puppet Labs maintains a repository of official and user-contributed modules called the Puppet Forge.

**Pulp Node**

A Capsule component that mirrors content. This is similar to the Spacewalk Proxy in Spacewalk. The main difference is that content can be pre-staged on the Pulp Node before it is used by a Host.

**Repository**

A collection of content (yum repository, puppet repository).

**Role**

A collection of permissions that are applied to a set of resources (such as Hosts).

**Smart Proxy**

A Capsule component that can integrate with external services, such as DNS or DHCP.

**Smart Variable**

A configuration value that controls how a Puppet Class behaves. This can be set on a Host, a Host Group, an Organization, or a Location.

**Standard Operating Environment (SOE)**

A controlled version of the operating system on which applications are deployed.

**Subscription**

The right to receive content and service from Red Hat. This is purchased by customers.

**Syncing**

Mirroring content from external resources into an organization's Library.

**Sync Plans**

Scheduled execution of syncing content.

**Usergroup**

A collection of roles which can be assigned to a collection of users. This is similar to the Role in Spacewalk.

**User**

A human who works in Katello. Authentication and authorization can be done via built in logic, or using external LDAP or kerberos resources.

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## Managing Content Hosts using GPG Keys

GPG Keys provide a way to verify the integrity of packages found within a Repository and/or Product. Once one or more GPG Keys have been created, they can be associated with a Product or Repository during creation or by editing an existing Product or Repository.

For more information on GPG Keys see [The GNU Privacy Guard](#).

# General Features

The following is a high-level summary of GPG Key features:

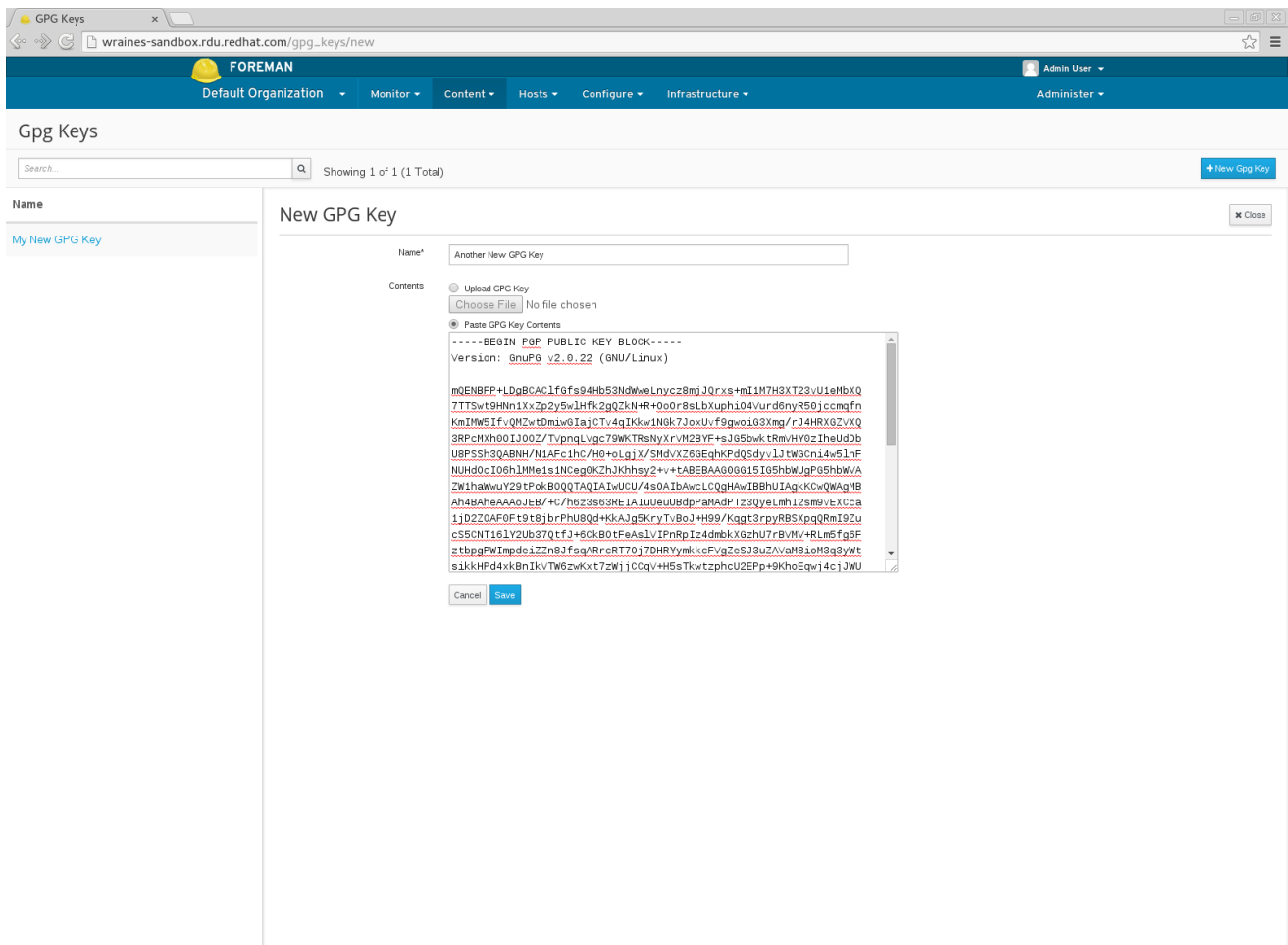
- [Create a GPG Key](#)
- [View Associated Products](#)
- [View Associated Repositories](#)
- [Associate GPG Key with Product](#)

## Create a GPG Key

To create a new GPG Key:

- navigate to: Content > GPG Keys
- click **New GPG Key**

Note that you may either upload your GPG Key or simply paste in the contents.



## View Associated Products

To view all Products that have been assigned a GPG Key:

- navigate to: Content > GPG Keys
- select the desired GPG Key from the list
- click **Products**



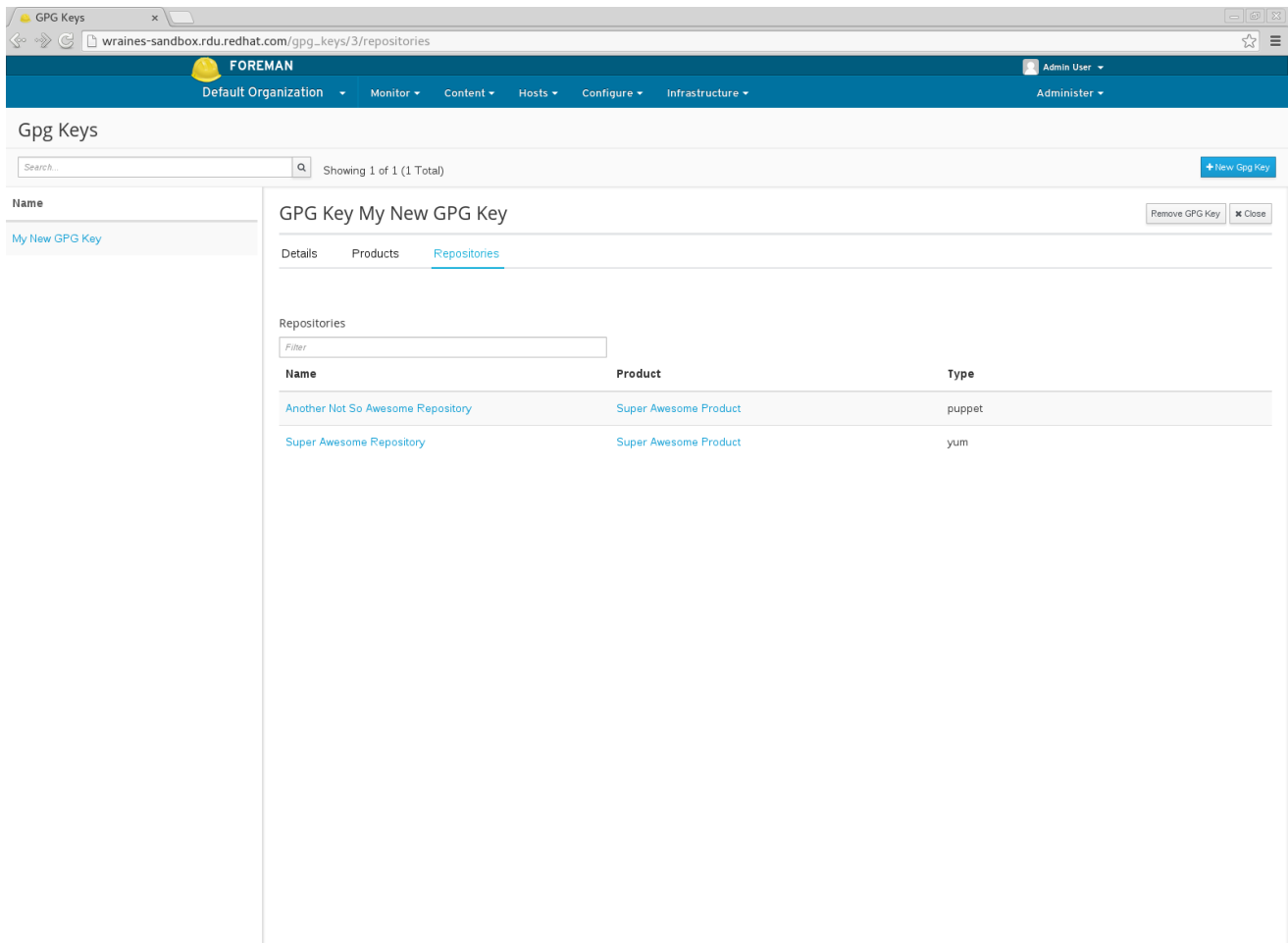
The screenshot shows the Foreman web interface for managing GPG Keys. The main header includes the 'FOREMAN' logo and navigation menus for 'Default Organization', 'Monitor', 'Content', 'Hosts', 'Configure', and 'Infrastructure'. The user is logged in as 'Admin User'. The page title is 'Gpg Keys'. A search bar shows 'Showing 1 of 1 (1 Total)'. A sidebar on the left lists 'Name' and 'My New GPG Key'. The main content area is titled 'GPG Key My New GPG Key' and has tabs for 'Details', 'Products', and 'Repositories'. The 'Products' tab is active, showing a table of products associated with the key. The table has columns for 'Name' and 'Repositories'. The data is as follows:

Name	Repositories
Super Awesome Product	2
Meh Product	0

## View Associated Repositories

To view all Repositories that have been assigned a GPG Key:

- navigate to: Content > GPG Keys
- select the desired GPG Key from the list
- click **Repositories**



## Associate GPG Key with Product

To add a GPG to a Product:

Note that adding a GPG Key to a Product adds the GPG Key to all current and future repositories unless a repository already has a GPG Key assigned. This can also be overridden by assigning a GPG Key to an individual repository afterward as well.

- navigate to: Content > Products
- select the desired Product from the list
- click **Details**
- click the edit button on the GPG Key field
- select the desired GPG Key

The screenshot shows the Foreman web interface. At the top, there is a navigation bar with the 'FOREMAN' logo and user information 'Admin User'. Below this is a menu with options like 'Default Organization', 'Monitor', 'Content', 'Hosts', 'Configure', and 'Infrastructure'. The main content area is titled 'Products' and shows a list of products. The 'Meh Product' is selected, and its details are displayed in a modal window. The details page has tabs for 'Details', 'Repositories', and 'Tasks'. Under the 'Details' tab, there are two columns of information. The left column is 'Basic Information' and includes fields for 'Name' (Meh Product), 'Label' (Meh\_Product), 'GPG Key' (My New GPG Key), and 'Description'. The right column is 'Sync Status' and includes fields for 'Sync Interval' (Synced manually, no interval set), 'Sync Plan', 'Last Sync' (Ago ( Local Time)), 'Next Sync' (Synced manually, no interval set), and 'Sync State' (not\_synced). There are also buttons for '+ New Sync Plan' and 'Sync Now'.

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## Managing Content Hosts using Host Collections

Host Collections provide a mechanism to statically group multiple Content Hosts. This enables administrators to group Content Hosts based on the needs of their organization. For example, Content Hosts could be grouped by function, department or business unit.

Once a Host Collection is created, it can be used to perform various actions on the Content Hosts contained within it. This

includes actions such as the following:

- Package installation, removal and update
- Errata installation
- Changing of assigned Lifecycle Environment or Content View

## Definitions

- [Content Host](#)

## General Features

The following is a high-level summary of the Host Collection features:

- [Create a Host Collection](#)
- [Add Content Hosts to a Host Collection](#)
- [Copy a Host Collection](#)
- [Perform actions on a Host Collection](#)

## Create a Host Collection

To create a new collection,

- navigate to: Hosts > Host Collections
- click **New Host Collection**

Note the following option:

- *Content Host Limit*: This option will control how many Content Hosts are allowed to be added to the collection.

The screenshot shows the Foreman web interface for creating a new host collection. The top navigation bar includes the 'FOREMAN' logo, user 'Admin User', and menu items for 'Default\_Organization', 'Monitor', 'Content', 'Hosts', 'Configure', 'Infrastructure', and 'Administer'. The main page title is 'Host Collections'. A search bar is present with the text 'Showing 0 of 0 (0 Total)'. A '+ New Host Collection' button is visible. The 'New Host Collection' modal form contains the following fields and options:

- Name\***: A text input field containing the value 'research'.
- Content Host Limit**: A label with the text 'Unlimited Content Hosts: .
- Description**: A large text area for entering a description.
- Buttons**: 'Cancel' and 'Save' buttons at the bottom, and a 'Close' button in the top right corner of the modal.

## Add Content Hosts to a Host Collection

To add Content Hosts to a collection:

- navigate to: Hosts > Host Collections
- select the desired collection from the list

- click **Content Hosts**
- click **Add**
- select the Content Hosts you would like to add
- click **Add Selected**

The screenshot shows the Foreman web interface. At the top, there is a navigation bar with the 'FOREMAN' logo and a user profile 'Admin User'. Below the navigation bar, the page title is 'Host Collections'. A search bar is present with the text 'Showing 1 of 1 (1 Total)'. On the right, there are buttons for '0 Selected | Deselect All' and '+ New Host Collection'. A sidebar on the left shows a list of collections, with 'research' selected. The main content area displays 'Host Collection: research' with buttons for 'Remove', 'Copy Collection', and 'Close'. Below this, there are tabs for 'Details', 'Content Hosts', and 'Collection Actions'. The 'Content Hosts' tab is active, showing a search bar and 'Showing 2 of 2 (2 Total) Content Hosts'. On the right, there are buttons for '2 Selected | Deselect All' and 'Add Selected'. A table lists the content hosts:

<input type="checkbox"/>	Name	Environment	Content View
<input checked="" type="checkbox"/>	host1.example.com	Library	Default Organization View
<input checked="" type="checkbox"/>	host2.example.org	Library	Default Organization View

## Copy a Host Collection

Copying a Host Collection allows a user to quickly create a new collection that is a copy of an existing one.

To copy a Host Collection:

- navigate to: Hosts > Host Collections
- select the desired collection from the list
- click **Copy Collection**
- enter a name for the new collection
- click **Create**

FOREMAN Admin User

Default\_Organization Monitor Content Hosts Configure Infrastructure Administrator

## Host Collections

Search... Showing 1 of 1 (1 Total) 0 Selected | Deselect All +New Host Collection

Name

research

### Host Collection: research

Remove Copy Collection Close

Details Content Hosts Collection Actions

List/Remove Add

Search... Showing 2 of 2 (2 Total) Content Hosts 0 Selected | Deselect All Add Selected

Name	Environment	Content View
<input type="checkbox"/> host1.example.com	Library	Default Organization View
<input type="checkbox"/> host2.example.org	Library	Default Organization View

Copy

New Name: development

Create Cancel

## Perform Actions on a Host Collection

To perform an action on Content Hosts within a collection:

- navigate to: Hosts > Host Collections
- select the desired collection from the list
- click **Collection Actions**
- click on the action that you would like to perform

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Default\_Organization Monitor Content Hosts Configure Infrastructure Administer

## Host Collections

Search... Showing 2 of 2 (2 Total) 0 Selected | Deselect All +New Host Collection

- Name
- development
- research >

### Host Collection: research

Remove Copy Collection Close

Details Content Hosts Collection Actions

The following actions can be performed on content hosts in this host collection:

- Package Installation, Removal, and Update
- Errata Installation
- Host Collection Membership
- Change assigned Environment or Content View

Note: clicking on an action will take the user to the appropriate Content Hosts Bulk Actions page, where all Content Hosts associated with the collection have been selected. [Click here, for more information on performing Content Host Bulk Actions](#)

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## Lifecycle Environments

What can a Lifecycle Environments be used for?

- Hold content view versions.
- To manage the lifecycle of Content Hosts.
- Establish workflow containers and promote content views.

# Definitions

- Lifecycle Environment - containers for content view versions which are consumed by content hosts.
- Library - a special kind of Lifecycle Environment that does not have a parent. The library serves as the main container for synced content such as products, puppet modules, and published content views. Every organization has a library. Subsequent environments are derived from the library. The first node of an environment is the Library, all future environments are derived from the library and follow the library in promotion order.
- Lifecycle Environment Path - Sequence of lifecycle environments that form the content promotion order.

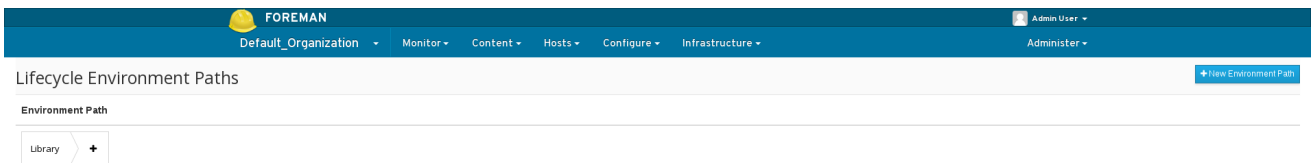
# General Workflow

First create a lifecycle environment connected to the library life cycle environment and promote content views to the new lifecycle environment. A [Content Host](#) can now register directly to the promoted content view in the promoted environment or library therein. Updates will be available as soon as new content is synced and promoted.

# Viewing the list of lifecycle environments

From the web UI, navigate to:

Content -> Lifecycle Environments



# Creating a lifecycle environment

Click on the + next to the Library or the prior environment to add a new path

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Lifecycle Environment Paths [+ New Environment Path](#)

Environment Path

Library Dev QA +

Create Environment [Close](#)

Name\* Prod  
Label\* Prod  
Description Production Environment  
[Cancel](#) [Save](#)

# Creating a lifecycle environment path

Click on the New Environment Path

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Default\_Organization Monitor Content Hosts Configure Infrastructure Administrator

Lifecycle Environment Paths [+ New Environment Path](#)

Environment Path

Library +

Create Environment [Close](#)

Name\* Dev2  
Label\* Dev2  
Description  
[Cancel](#) [Save](#)

Library Dev QA Prod +

FOREMAN Admin User

Default\_Organization Monitor Content Hosts Configure Infrastructure

Administrator

Lifecycle Environment Paths [+ New Environment Path](#)

Create Successful.

Environment Path

Library Dev2 +

Library Dev QA Prod +

## View/Updating environment name

Click on the name of the environment.

FOREMAN Admin User

Default\_Organization Monitor Content Hosts Configure Infrastructure

Administrator

Lifecycle Environment Paths [+ New Environment Path](#)

Environment Path

Library Dev2 +

Library Dev QA Prod +

Environment Dev [Close](#)

Name	Dev	<a href="#">✎</a>
Label	Dev	<a href="#">✎</a>
Description		<a href="#">✎</a>

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## Provisioning

See [the Foreman manual](#) for general information on configuring provisioning.

## Templates

Katello ships a number of templates in addition to the standard Foreman ones. When using these templates, if a host has a Host group with an [Activation Key](#), it will register as a Content Host automatically.

- **Katello Kickstart Default** - Kickstart template for Fedora, CentOS, RHEL, and other Red Hat-compatible operating systems.
- **Katello Kickstart Default Finish** - image-based provisioning
- **Katello Kickstart Default User Data** - cloud-init template for EC2 and OpenStack
- **subscription\_manager\_registration** - Snippet for registering a host for content

To customize any of the above templates, simply clone them and add your changes.

When you synchronize a repository with a distribution such as Fedora or CentOS, Katello will automatically create the operating system and assign these default templates. You may change the defaults by going to Administer > Settings, and selecting the Katello tab.

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# Managing Puppet Content

## Importing the Puppet Forge

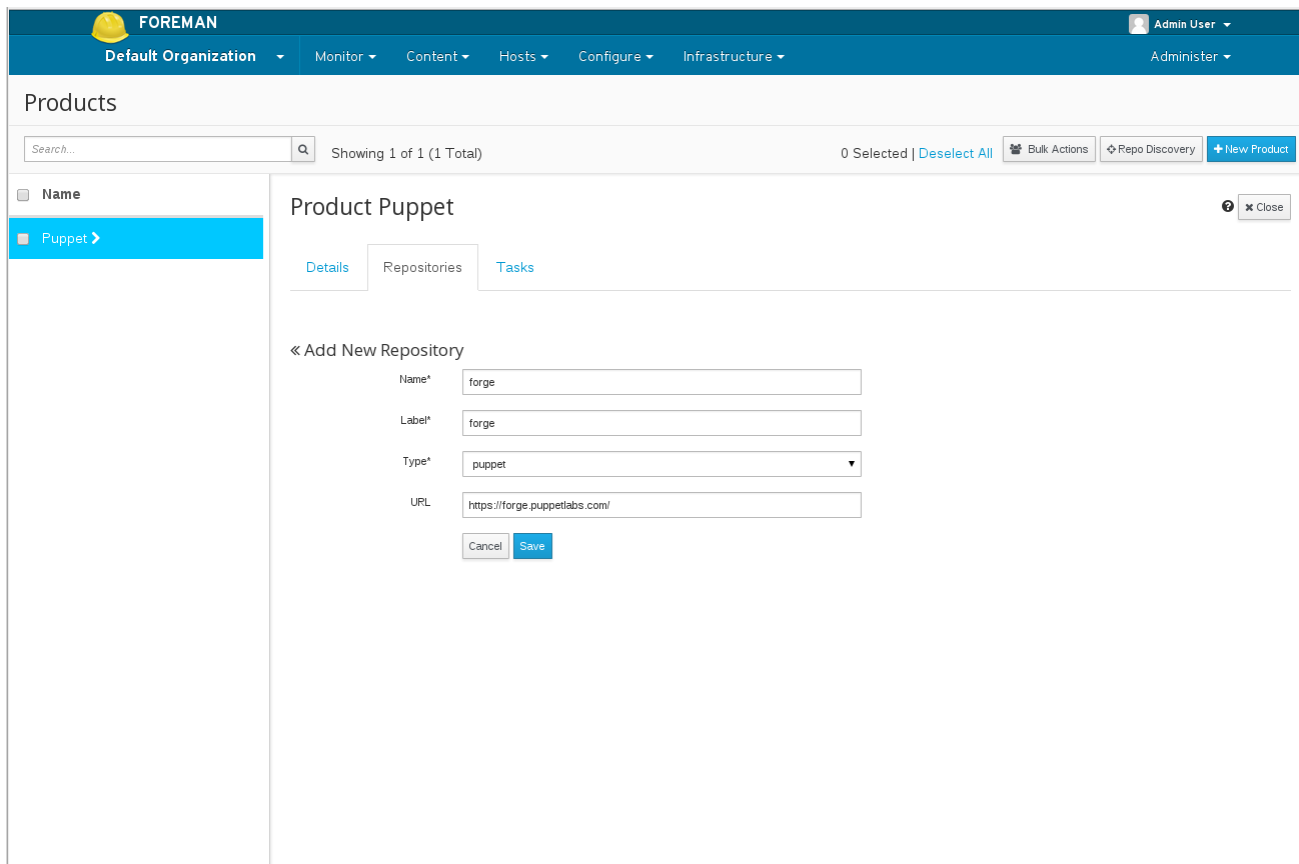
The [Puppet Forge](#) is a collection of puppet modules written by the community which can be used to manage hosts in Katello. These modules can be used in content views as described in the [content views guide](#) in order to configure the running hosts.

To import the puppet forge navigate to

Content > Products

Click on the *+New Product* button.

Once the product is created, select the product and click the *Create Repository* button. Fill out the repository as shown:



This can be done via the CLI:

```
hammer product create
--organization "Default Organization"
--name Puppet

hammer repository create
--organization "Default Organization"
--product Puppet
--name forge
--content-type puppet
--url "https://forge.puppetlabs.com/"
```

The repository can [now be synced](#).

## Importing Puppet Modules from Git

In order to allow users to import puppet modules from Git repositories, Katello comes with a tool called 'pulp-puppet-module-builder' from the pulp-puppet-tools RPM. This utility will be available on the Katello server but it can also be installed on another machine if desired. By running the 'pulp-puppet-module-builder' against a Git repository, it will checkout the repository, build all of the modules, and publish them in a structure Katello can synchronize.

The most common method is to run the utility on the Katello server itself and publish to a local file system directory and sync against that directory.

```
mkdir /modules
chmod 755 /modules
pulp-puppet-module-builder --output-dir=/modules --url=git@mygitserver.com:mymodules.git --branch=develop
```

This will checkout the 'develop' branch of the Git repository located at 'git@mygitserver.com:mymodules.git' and publish them to the `/modules` directory. Then, from within Katello, simply set the url on your Puppet Repository to 'file://modules'. You can now sync the Repository just like any other Repository.

If you are running this on a remote machine, you will need to publish the containing folder to a location accessible by HTTP or HTTPS.



```
mkdir /var/www/html/modules/  
chmod 755 /var/www/html/modules/  
pulp-puppet-module-builder --output-dir=/var/www/html/modules --url=git@mygitserver.com:mymodules.git --branch=develop
```

Then in Katello, simply enter 'http://HOSTNAME/modules/' for the Repository url and sync it like you normally would.

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## Red Hat Content

Katello can be used to manage content associated with Red Hat products based upon available subscriptions. This includes content such as RPMs, package groups, errata and distributions.

## Definitions

- Subscription Manifest - An archive file containing certificates and data that represent the subscriptions that are available. A subscription manifest is created and downloaded from the Red Hat Customer Portal.
- Repository - Collection of content (either rpm or puppet).
- Product - Collection of repositories (content hosts attach to a product).
- Library - The initial lifecycle environment where repositories are created. Content that is synced or uploaded lands in the library.

## General Workflow

The following is a high-level summary of the workflow:

- Create a subscription manifest using the Red Hat Customer Portal
- Import the subscription manifest
- Enable Red Hat repositories
- Synchronize repositories
- Schedule repository synchronization
- Attach a content host to a product for Red Hat content

## Create a Subscription Manifest Using the Red Hat Customer Portal

If you are a Red Hat customer, you should have access to the Red Hat Customer Portal to create and download a subscription manifest. Once created, the manifest can be imported in to a Katello Organization.

To access the Red Hat Customer Portal, [click here](#)

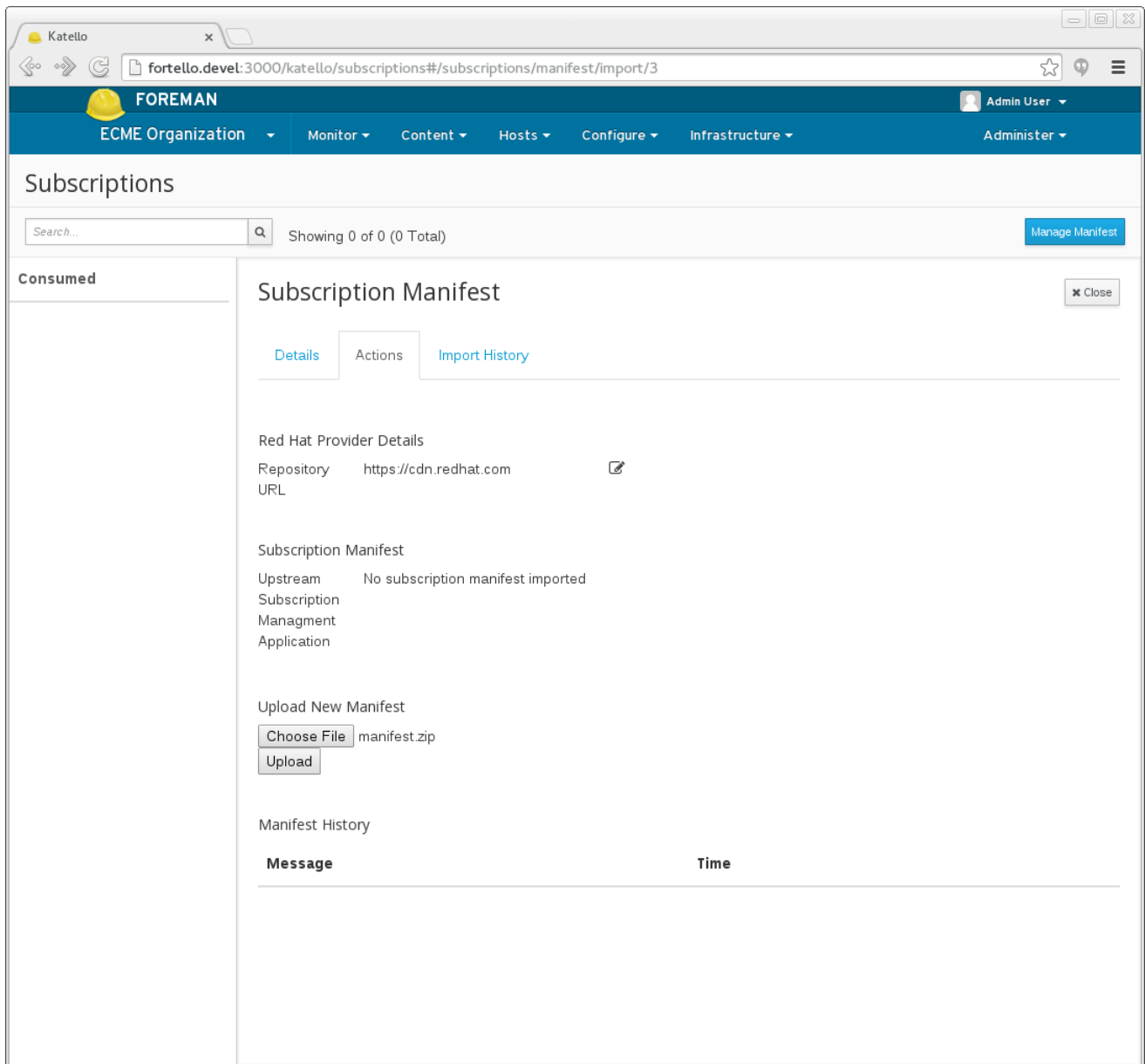
For details on how to create a subscription manifest, [click here](#)

## Import the Subscription Manifest

Importing a subscription manifest will allow for Red Hat content associated with purchased subscriptions to be enabled and synchronized to Katello.

To import a manifest,

- navigate to: Content > Red Hat Subscriptions
- click **Choose File**
- navigate to the file containing the manifest (e.g. manifest.zip)
- click **Open**
- click **Upload**



## Enable Red Hat Repositories

Once a subscription manifest is imported, access is available to potentially hundreds of Red Hat Repositories (e.g. Red Hat Enterprise Linux Server, Red Hat Enterprise Virtualization...etc). This process allows you to select only those that you are interested in for your enterprise.

To enable Red Hat repositories,

- navigate to: Content > Red Hat Repositories
- select the content type: RPMs, Source RPMs, Debug RPMs, Beta, ISOs or Other
- select one or more Red Hat products (e.g. Red Hat Enterprise Linux Server)
- select one or more Repository Sets (e.g. Red Hat Enterprise Linux 6 Server (RPMs))
- select one or more Repositories (e.g. Red Hat Enterprise Linux 6 Server RPMs x86\_64 6Server)

Note:

- When enabling a RHEL repository, Red Hat recommends selecting the Server repo (e.g. 6Server, 5Server) versus a specific release (e.g. 6.2). When a specific release is necessary, the preferred way is to create a Content View with filters that narrow the content to the desired version (e.g. 6.2)
- If you plan to provision content hosts, be sure to enable both the RPM and Kickstart repositories.

Katello  
fortello.devel:3000/katello/providers/redhat\_provider#!=

**FOREMAN** Admin User

ECME Organization Monitor Content Hosts Configure Infrastructure Administer

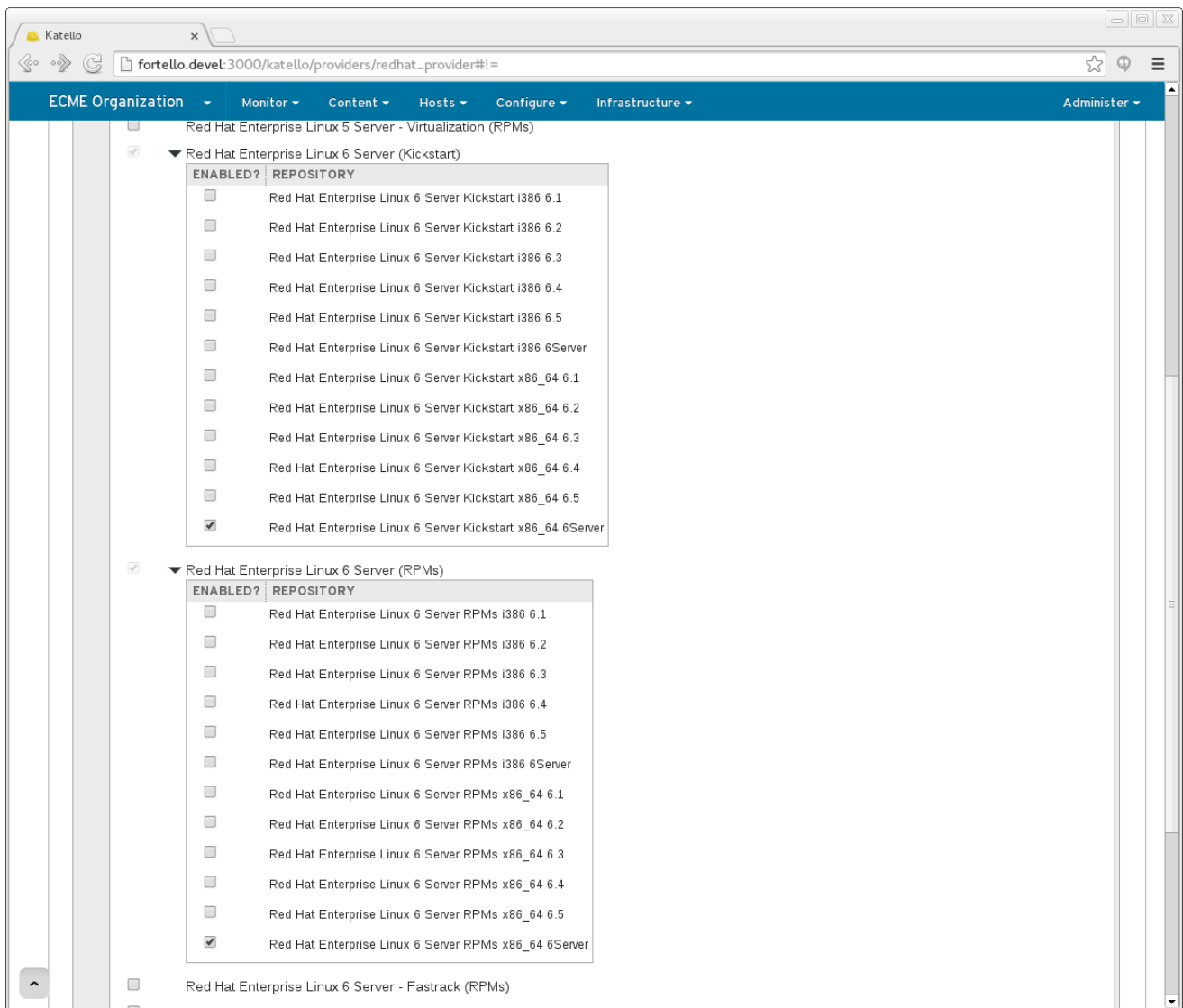
Expand each Red Hat Product below to examine the different repository sets available. When enabling a repository set, the different repositories within are discovered and may be enabled individually.

### Enable Red Hat Repositories

**RPMs** Source RPMs Debug RPMs Beta ISOs Other

**PRODUCT**

- ▶ Red Hat Enterprise Linux High Availability for RHEL Server
- ▶ Red Hat Enterprise Linux Load Balancer for RHEL Server
- ▶ Red Hat Enterprise Linux Resilient Storage for RHEL Server
- ▶ Red Hat Enterprise Linux Server
- ▶ Red Hat Enterprise Linux Workstation

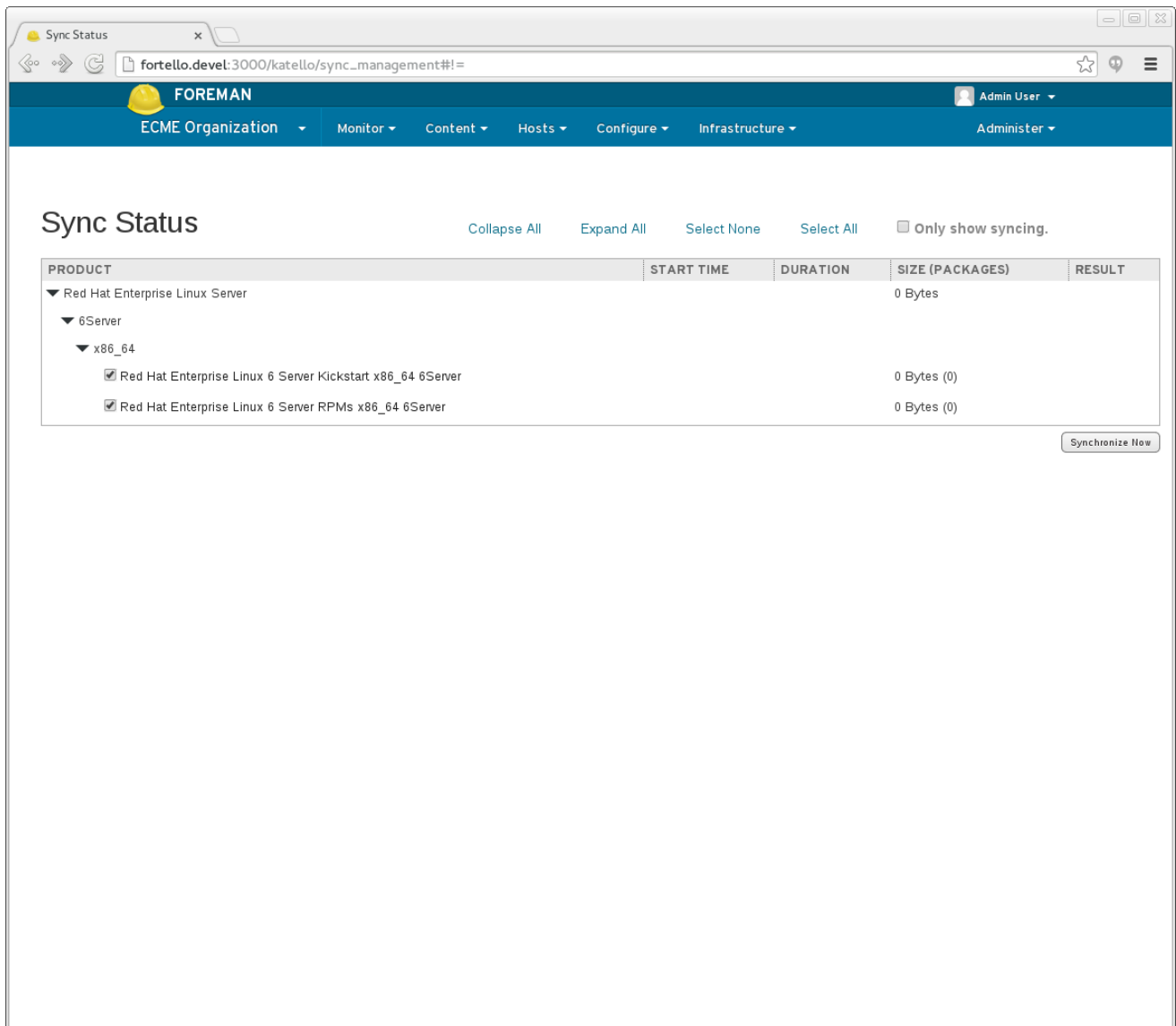


## Synchronize Repositories

Synchronizing a repository will retrieve all associated content and mirror the content in the Katello Library lifecycle environment.

To sync multiple repositories as well as track their progress,

- navigate to: Content > Sync Status
- expand the desired products
- select the repositories to sync
- click **Synchronize Now**



## Schedule Repository Synchronization

### Creating a Sync Plan

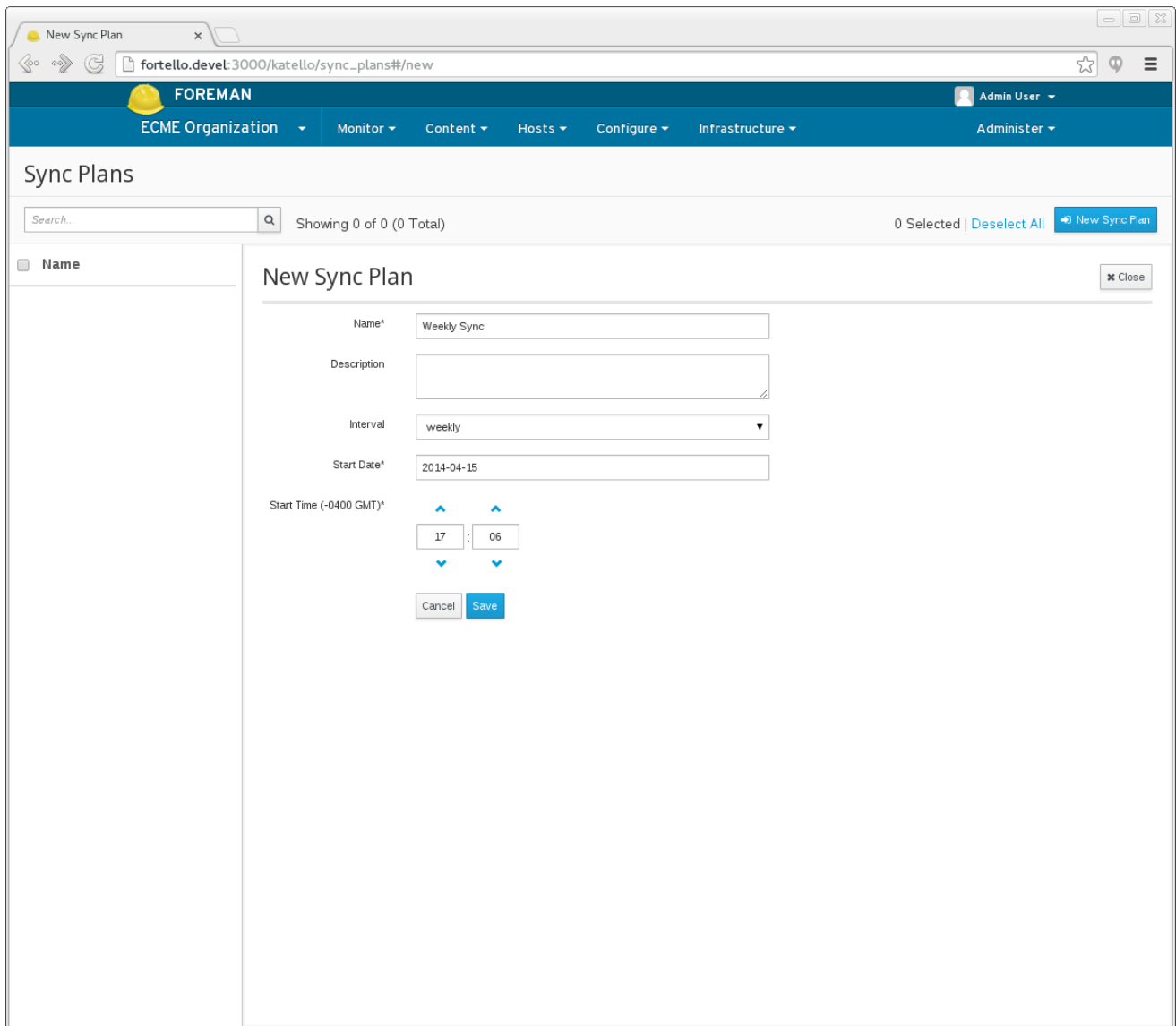
Sync plans provide the ability to schedule repository synchronization on a daily, weekly or a monthly basis. Sync plans can be applied individually or to a set of repositories.

To create a Sync Plan:

- navigate to: Content > Sync Plans
- click **New Sync Plan** on the upper right

Note the following options:

- *Start Date* and *Start Time*: specify the day of the week/month and time of the day to run the recurring syncs. For example, a sync plan that starts on Sunday 2014-04-06 at 2:30 will occur every Sunday at 2:30 every week if it has a weekly interval. If on a monthly interval it would sync every month on the 6th day at 2:30.

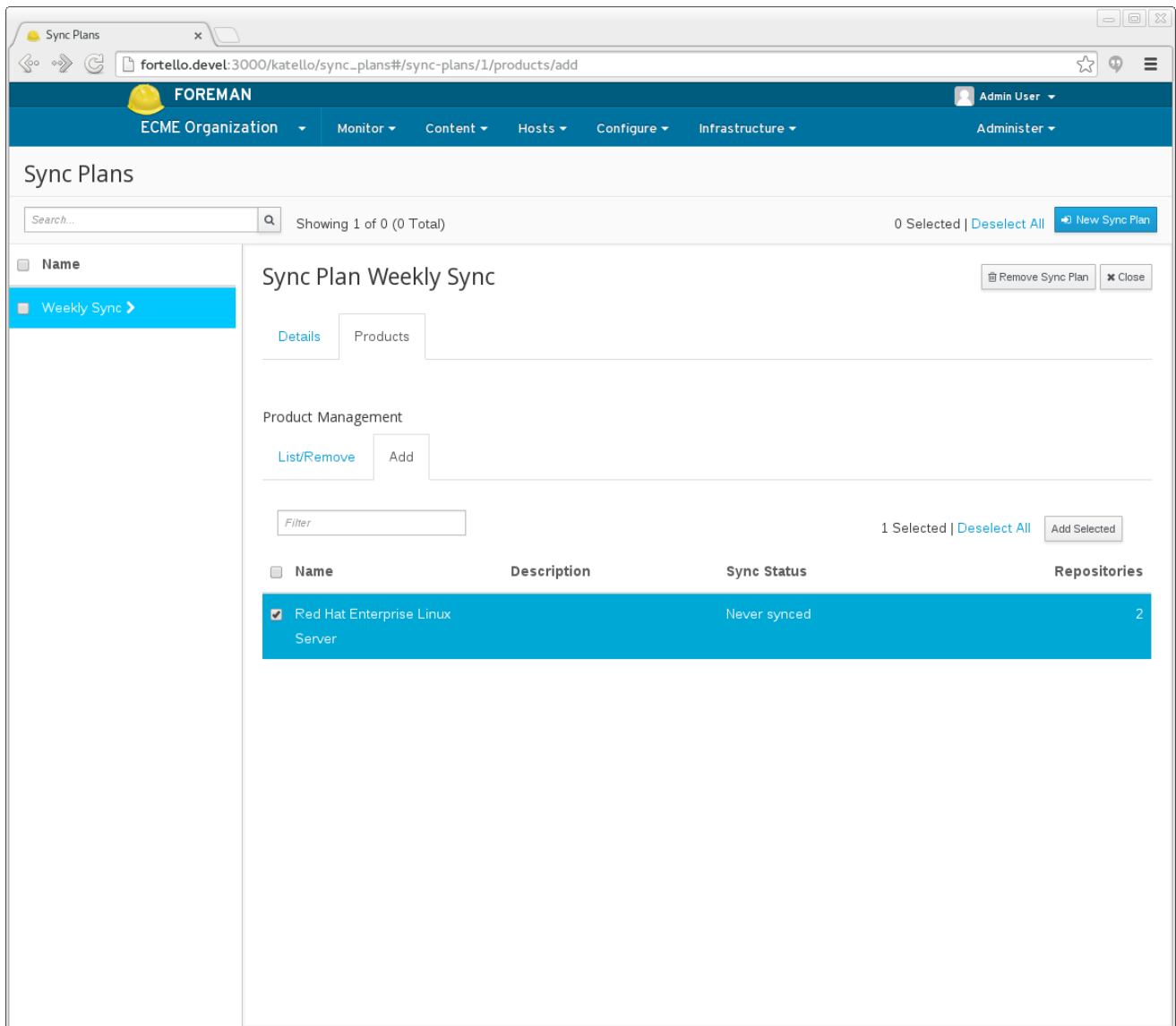


## Assigning a Sync Plan to a Red Hat Product

To assign a sync plan to a product,

- navigate to Content > Sync Plans
- select your Sync Plan
- click **Products**
- click **Add**
- select the products that you want to add
- click **Add Selected** on the upper right





## Attach a Content Host to a Product for Red Hat Content

To read about registering a content host and subscribing it to a product, click [TODO](#).

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Foreman 2.2.2 has been released! [Follow the quick start to install it.](#)

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# Katello 3.1 Documentation

3.1 ▾

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## 6. Troubleshooting

# Katello Troubleshooting

For general support information, see [here](#).

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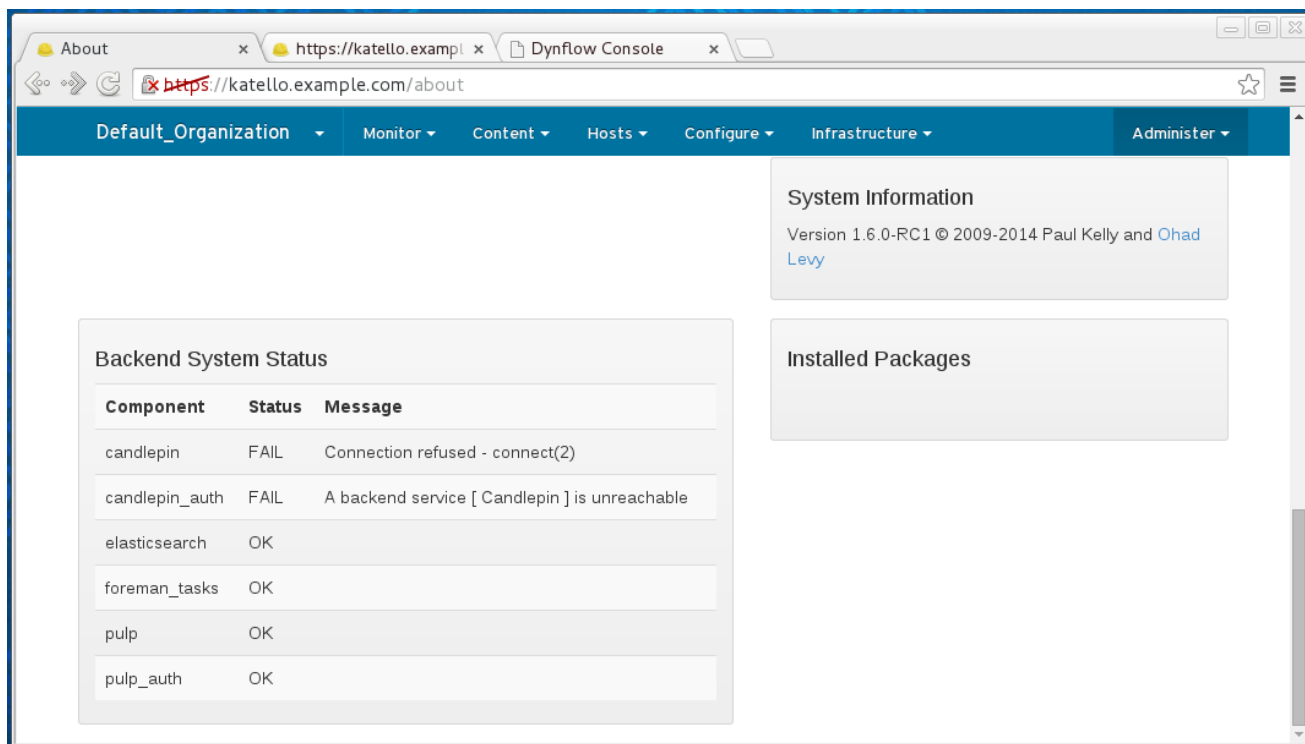
- [Sub-service Status](#)
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## Sub-services status

Katello uses a set of back-end services to perform the actual job. The status of these services can negatively influence the whole system and it's one of the first things to check when some errors occur.

The status of back-end services can be found either from the Web UI on the `/about` page:



Alternatively, the `hammer ping` command can be used to get this information.

`katello-service` tool can be used to restart Katello related services. See `man katello-service` for more details.

## Tasks

Katello uses [Foreman Tasks](#) for orchestration between the underlying services (local database, Pulp, Candlepin...). The tasks are modeled as [Dynflow](#) processes. When something goes wrong (and there might be many reasons for this happening), Dynflow gives us the tools to recover from these errors to get to the consistent state.

## Health checking

There are two properties used for identifying issues with a task:

- **state** - what phase of execution is the task in, possible values are:
  - **planning** - the planning phase of the task is performed: the operations performed in this phase shouldn't modify anything outside Katello's database. The execution of this phase happens in the web-process thread and usually should not take more than few seconds
  - **planned** - the planning phase finished and the task is waiting for the executor process ( `foreman-tasks service` ) to pick it up
  - **running** - the executor is performing the orchestration action, modifying the state of external services to converge to the final state
  - **paused** - something went wrong during running the task and it's waiting for the resolution (further details below)
  - **stopped** - the execution of the task finished (the success is determined by the `result` value)
  - **result** - how the task ended up (or is going to end up if we already know it)
  - **pending** - task is in the process of executing
  - **success** - no errors occurred during the execution
  - **error** - unresolved errors occurred during the execution
  - **warning** - there were errors during the execution, but they did not prevent the task from finishing or were skipped manually (further details below).

To see all the tasks in the system, one can go to `/foreman_tasks/tasks` page. To see all the tasks that failed, one can search on `result = error` :

The screenshot shows the Foreman web interface. The browser address bar contains the URL: `https://katello.example.com/foreman_tasks/tasks?utf8=✓&search=result+%3D+error`. The page title is "Tasks". A search bar contains the text "result = error". Below the search bar is a table with the following data:

Action	State	Result	Started at	User
Publish content view 'My view'; organization 'Default_Organization'	paused	error	2014-09-12 08:51:02 UTC	admin
Synchronize repository 'zoo 1.0'; product 'Zoo'; organization 'Default_Organization'	stopped	error	2014-09-11 12:28:29 UTC	admin
Create	stopped	error	2014-09-10 17:18:23 UTC	admin
Create	stopped	error	2014-09-10 14:28:00 UTC	admin
Destroy organization 'test'	stopped	error	2014-09-10 12:24:40 UTC	admin
Destroy organization 'test'	stopped	error	2014-09-10 11:22:46 UTC	admin
Create	stopped	error	2014-09-03 19:23:00 UTC	admin

Failed tasks include those in the 'stopped' or 'paused' state. The stopped tasks are already considered as resolved, there is no risk of inconsistency. The tasks in the 'stopped' state and the 'error' result are usually those failed during the planning phase (usually locking error or bad input data).

To see all the tasks requiring further assistance, filter on `state = paused` :

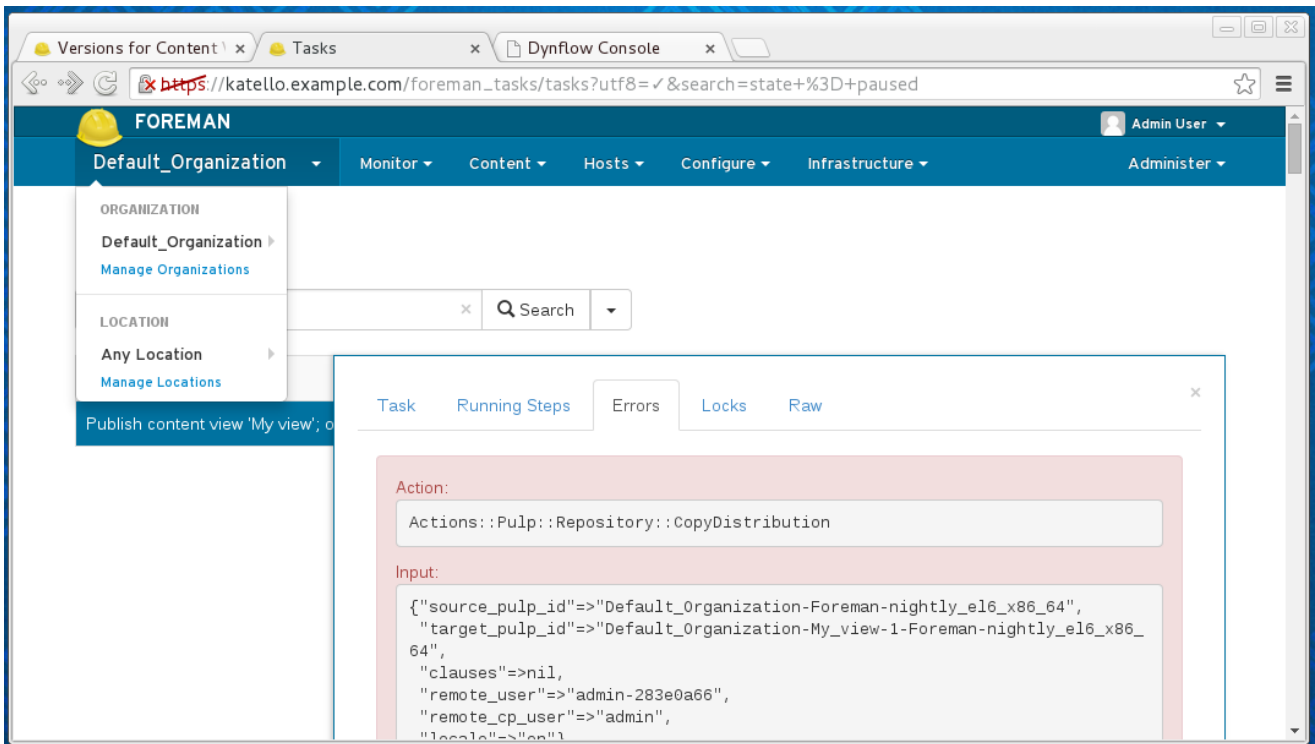
The screenshot shows the Foreman web interface. The browser address bar contains the URL: `https://katello.example.com/foreman_tasks/tasks?utf8=✓&search=state+%3D+paused`. The page title is "Tasks". A search bar contains the text "state = paused". Below the search bar is a table with the following data:

Action	State	Result	Started at	User
Publish content view 'My view'; organization 'Default_Organization'	paused	error	2014-09-12 08:51:02 UTC	admin

Below the table, there is a button that says "Displaying 1 entry".

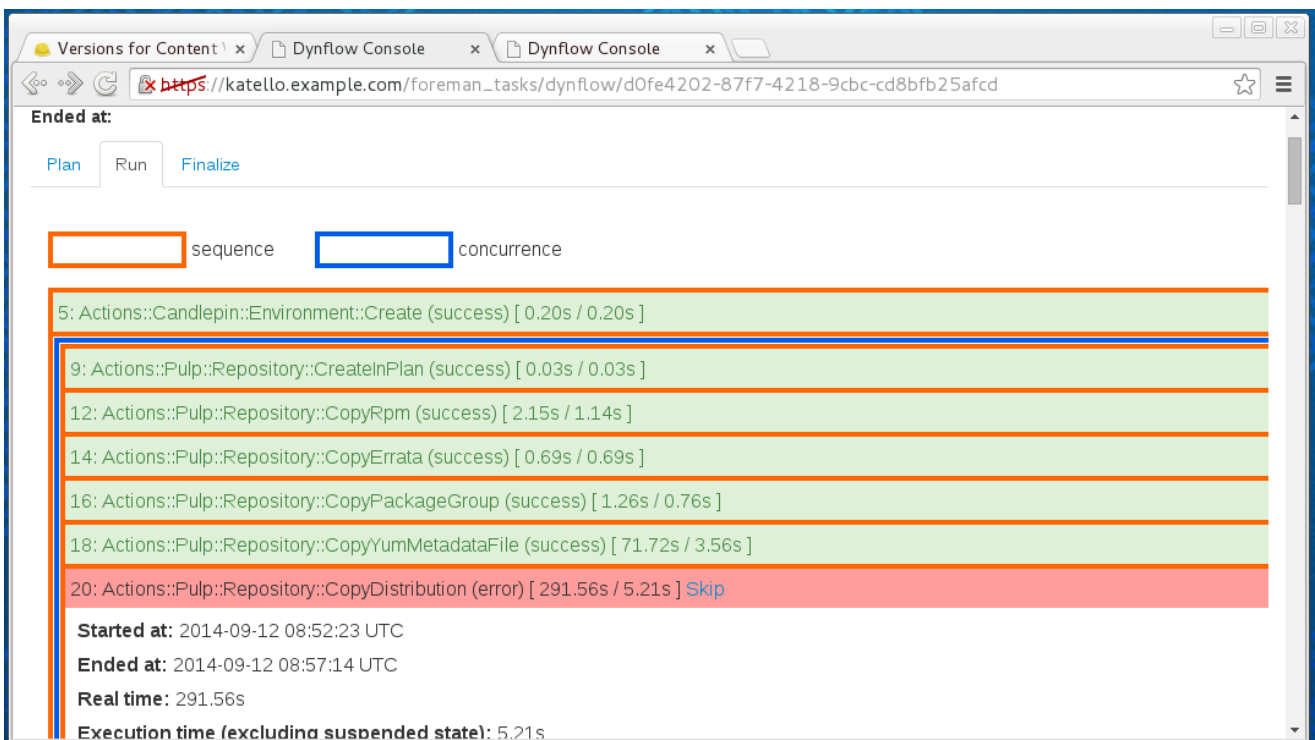
## Dealing with paused task

Once the paused task is identified, one can investigate the problem causing the errors:



The resolution of the problem is dependent on the error details. The task may be resolvable by resuming the task: make sure the sub-services are running (see [Sub-services status](#) for more details) and then click 'Resume' within the web interface.

If this still doesn't help, one possible step is going to a Dynflow console (the button from task details takes you there):



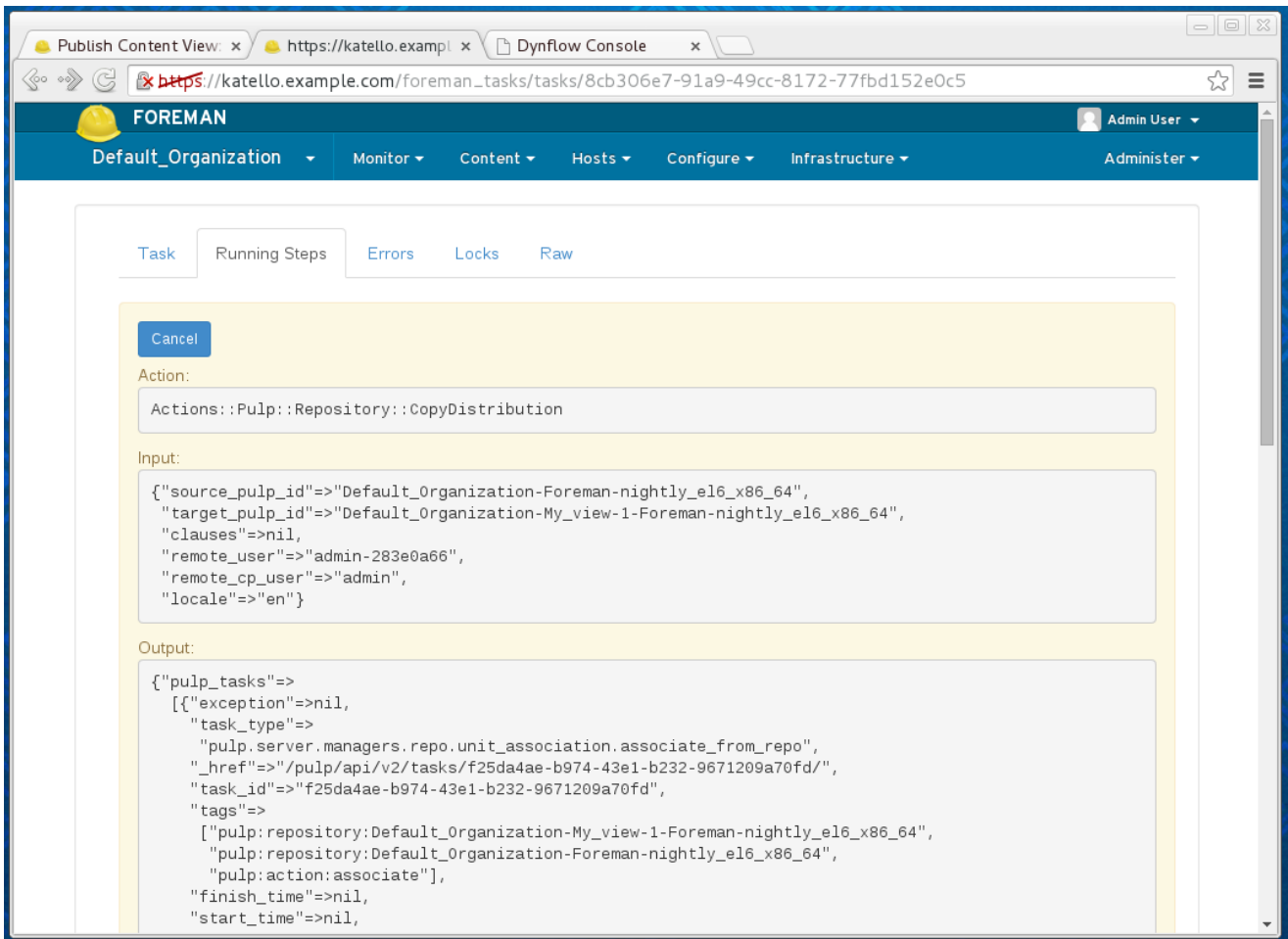
**Caution:** Dynflow console is considered a low-level tool and should be used very carefully, ideally discussing other options before using its features

If the failed task was taken care of by other means (performing the failed steps manually) or it was identified as not critical to the whole task, one can **skip** the failed step and **resume** the task to continue. These tasks end up with **warning** result at the end, to indicate there was some difficulty during the run.

## Dealing with Long Running Tasks

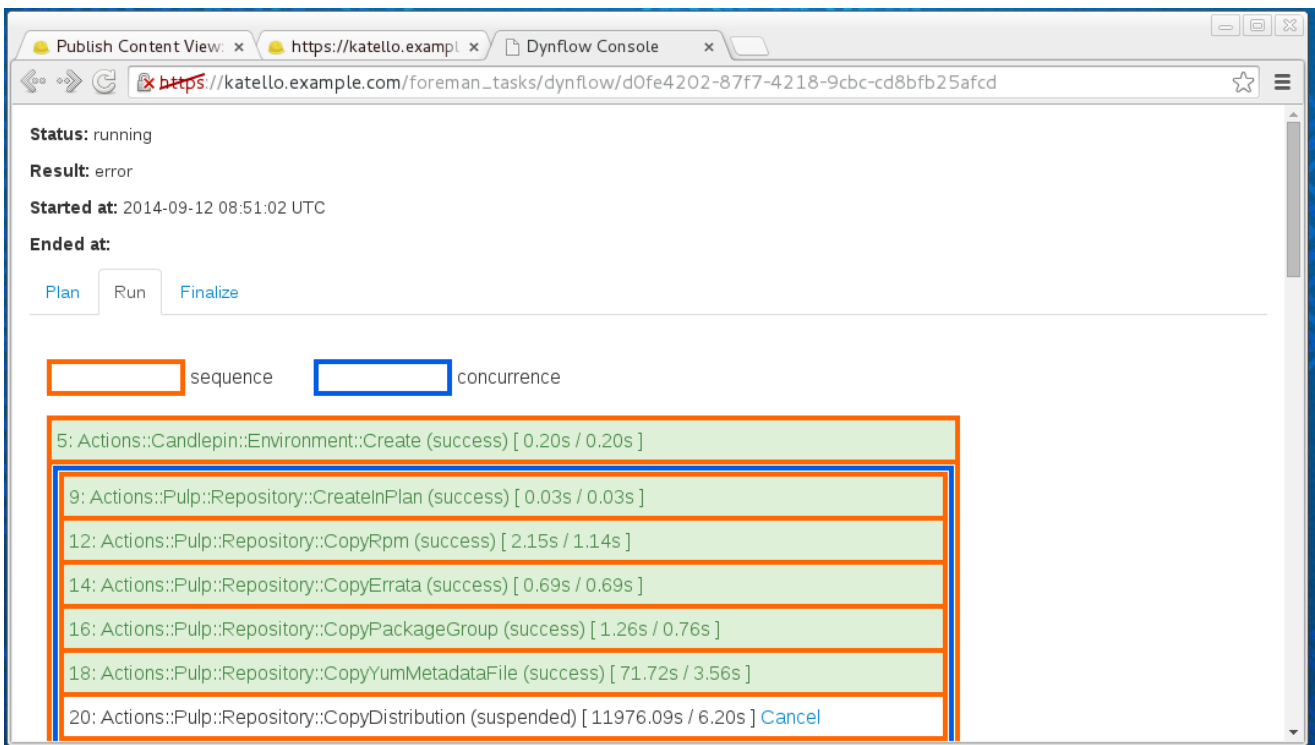
In some cases, there might be an issue with sub-services that make it appear as if the task is running for too long without any obvious evidence that something is occurring within the task.

The first place to look in this case is filtering the tasks on `state = running` and looking at `Running Steps` in the task details:



In this case, the "start\_time" => nil indicates that the task was not picked up by Pulp, which usually means some issues with running the Pulp workers. See (see [Sub-services status](#) for more details).

One can also go to the Dynflow console for even more details: the `suspended` state means that the step is waiting for the external task to finish - the `suspended` state itself doesn't have to indicate any error:

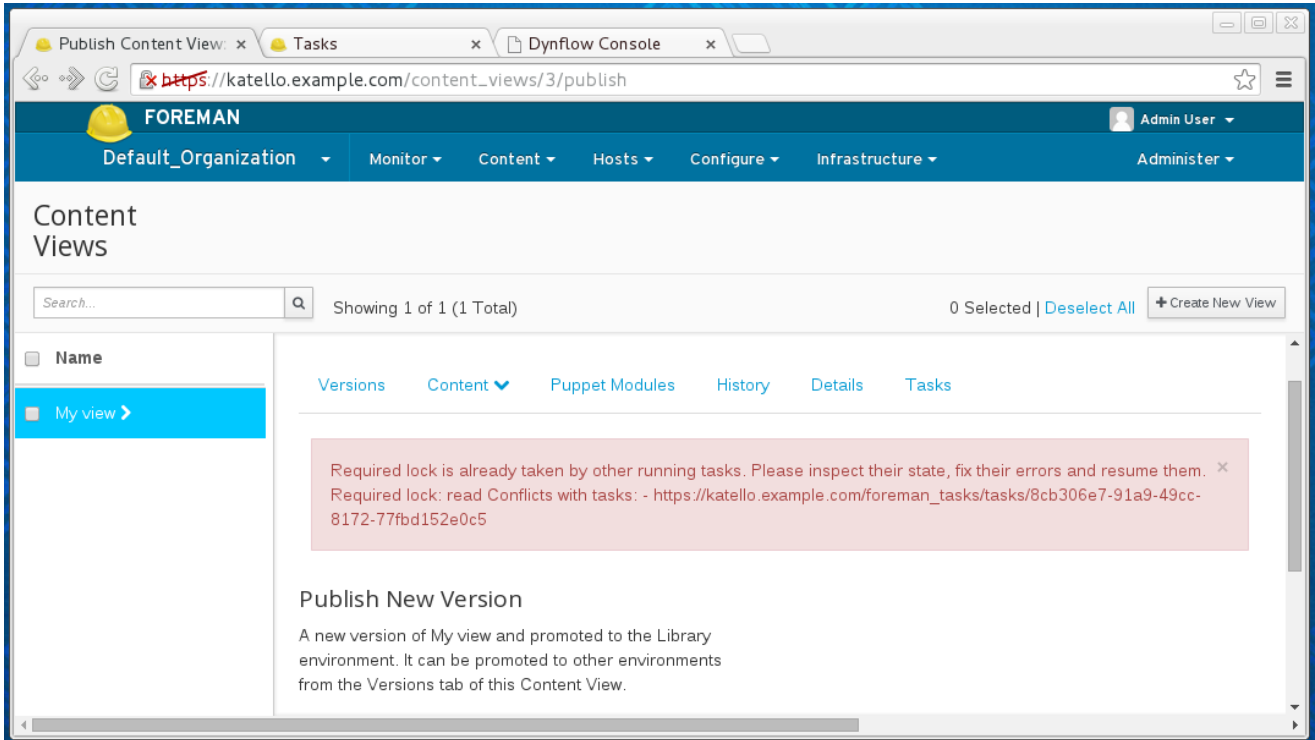


If you're sure the underlying services are running fine, depending on the type of task, there might be a possibility to cancel the running step and possibly following [dealing with paused tasks](#) instead.

# Locking

Foreman tasks provides a locking mechanism which is important to prevent the possibility of operations colliding that are being performed concurrently on the same resource (such as synchronizing and deleting a repository at the same time).

When trying to run an operation on a resource that another task is already running, one can get **Required lock is already taken by other running tasks.** :



A locked resource is one where another task that is related to the same resource is already running. Thus, the task being attempted will result in that task being tried **in running or paused state**. This means that the error is triggered also in cases, where there is a task with unresolved failure (see [dealing with paused tasks](#) for more details).

In rare cases, it might be hard to get into the stopped state. There is a possibility to unlock the resource in the **running / paused** task. This will switch the task into **stopped** state, freeing the resources for other tasks. **Caution: unlocking allows running other tasks to run on potentially inconsistent data, which might lead into further errors.** It's still possible to go to the Dynflow console and resume the tasks, even after using the unlock feature. There are two unlock-related buttons: **Unlock** and **Force Unlock**. The only difference between these two is the second one is allowed even when the task is in **running** state, and therefore is potentially even more dangerous than the **Unlock** button. See [dealing with tasks running too long](#) before attempting to use the **Force Unlock** option.

# Debug Certificate

Debug certificates (also called Ueber Certificates) can be used to unlock all the content for a given Organization. These are meant to be used by sysadmins who are debugging issues with the Katello install.

## Generating a Debug Certificate

To generate a debug certificate for a given Organization from the UI, navigate to the organizations page and click on the organization for which you want a debug certificate. Click on the button to generate and download the certificate as highlighted below:

## Edit Default Organization

Name \*

Label \*

Description

Default System SLA

**Debug certificate**  This certificate allows a user to view the repositories in any environment from a browser.

Users

- Smart Proxies
- Subnets
- Compute Resources
- Media

All users

Select users

All items Filter + Selected items -

To generate a debug certificate using the API see the API docs located on your server running at `/apidoc`.

In either case, you will get the Private Key and Certificate returned to you in a format such as :

```
Key: -----BEGIN RSA PRIVATE KEY-----
<<<<DER ENCODED TEXT>>>>
-----END RSA PRIVATE KEY-----

Cert: -----BEGIN CERTIFICATE-----
<<<<DER ENCODED TEXT>>>>
-----END CERTIFICATE-----
```

## Using Firefox to browse content

If you wish to use the certificate to browse content via Firefox, do the following:

1. Copy the contents of the above file from `-----BEGIN RSA PRIVATE KEY-----` to `-----END RSA PRIVATE KEY-----` inclusive to a file called `key.pem`
2. Copy the contents of the above file from `-----BEGIN CERTIFICATE-----` to `-----END CERTIFICATE-----` inclusive to a file called `cert.pem`
3. Run the following command to create a pkcs12 file:

```
openssl pkcs12 -keypbe PBE-SHA1-3DES -certpbe PBE-SHA1-3DES -export -in cert.pem -inkey key.pem -out [NAME].pfx -name [NAME]
```

4. Provide a password when prompted.
5. Using the preferences tab, import the resulting pfx file into your browser (Edit->Preferences->Advanced Tab -> View Certificates -> Import)
6. Point your browser at `http://[FQDN]/pulp/repos/[ORG_NAME]`

To use curl to access the repository, you can provide `-cert` and `-key` options. Provided the cert is in `~/cert.pem` and key in `~/key.cert`, the following command will let you access any repository data in the organization. To check the access to a repository, checking the availability of `repodata/repomd.xml` is usually a good idea (make sure `key.pem` and `cert.pem` are "absolute paths" otherwise it silently fails):

```
curl -k --cert ~/cert.pem --key ~/key.pem https://katello.example.com/pulp/repos/test/Dev/custom/zoo/base-two/repodata/repomd.xml
```

## Frequently Asked Questions

Can I use pulp-admin with Katello?



We do not encourage the use of pulp-admin because it has the potential to get data out of sync. However, pulp-admin can be useful when troubleshooting Katello.

1. Install needed packages

```
yum install -y pulp-admin-client pulp-rpm-admin-extensions
```

2. Edit /etc/pulp/admin/admin.conf
3. Uncomment the 'host:' line and add your server's hostname:

```
host: katello-hostname.example.com
```

4. Run `grep default_password /etc/pulp/server.conf` to lookup the admin password

```
sudo grep default_password /etc/pulp/server.conf
# default_password: default password for admin when it is first created; this
default_password: rGox3G9QhfCRD8fTsNR7FxqdgbfJfSJ
```

5. Use pulp-admin by specifying the admin username and password:

```
pulp-admin -u admin -p rGox3G9QhfCRD8fTsNR7FxqdgbfJfSJ repo list
```

## Using pulp-admin without password

Using the 'pulp-admin login' command does not function and is not supported with Katello in an attempt to limit access to the certificate authority generated at installation time.

Katello 3.0 generates a client cert at installation time which allows usage of pulp-admin without specifying the username and password. To use this:

1. `mkdir ~/.pulp/`
2. Copy the public client cert and private key to a file together:

```
# sudo cat /etc/pki/katello/certs/pulp-client.crt /etc/pki/katello/private/pulp-client.key > ~/.pulp/user-cert.pem
```

3. Run pulp-admin without username and password:

```
pulp-admin repo list
```

## How can I sync a repository like Katello does directly from the console?

Sometimes you want to debug why a synchronization of a repository from Katello is failing and rather than dig through log files and error messages it can often be easier to try to sync the repo with the "grinder" tool which is what Katello uses to download repositories. The tool can be ran from a terminal on your Katello server:

```
$ grinder yum --label=sync-test --url=https://fedorapeople.org/groups/katello/releases/yum/1.0/RHEL/6Server/x86_64/
grinder.RepoFetch: INFO   fetchYumRepo() repo_label = sync-test, repo_url =
https://fedorapeople.org/groups/katello/releases/yum/1.0/RHEL/6Server/x86_64/, basepath = ./, verify_options = {}
grinder.RepoFetch: INFO   sync-test, https://fedorapeople.org/groups/katello/releases/yum/1.0/RHEL/6Server/x86_64/,
Calling RepoFetch with: cacert=<None>, clicert=<None>, clikey=<None>, proxy_url=<None>, proxy_port=<3128>, proxy_user=<None
e>,
proxy_pass=<NOT_LOGGED>, sslverify=<1>, max_speed=<None>, verify_options=<{}>, filter=<None>
....
grinder.ParallelFetch: INFO   5 threads are active. 8 items left to be fetched
grinder.ParallelFetch: INFO   4 threads are active. 4 items left to be fetched
grinder.ParallelFetch: INFO   WorkerThread deleting ActiveObject
grinder.ParallelFetch: INFO   Thread ending
grinder.ParallelFetch: INFO   3 threads are active. 3 items left to be fetched
grinder.ParallelFetch: INFO   WorkerThread deleting ActiveObject
grinder.ParallelFetch: INFO   Thread ending
```

You now have a directory called sync-test off of your current working directory:

```
$ ls sync-test/
converge-ui-devel-0.8.3-1.el6.noarch.rpm
elasticsearch-0.18.4-13.el6.noarch.rpm
katello-1.0.6-1.el6.noarch.rpm
katello-agent-1.0.6-1.el6.noarch.rpm
katello-all-1.0.6-1.el6.noarch.rpm
katello-certs-tools-1.1.7-1.el6.noarch.rpm
lucene3-contrib-3.4.0-2.el6.noarch.rpm
reodata
rubygem-actionmailer-3.0.10-3.el6.noarch.rpm
...
```

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