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Katello 3.9 Installation

These instructions are for installing Katello 3.9, 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-server-ca.crt` in the `/pub` directory of your Katello server (e.g. <http://katello.example.com/pub/katello-server-ca.crt>).

Important Note for Existing Installations

Katello does not currently support installation on existing Foreman deployments. **DO NOT attempt to install Katello on an existing Foreman deployment**, unless you are a Foreman developer and willing to debug the broken configuration that will result from attempting an install on existing system.

Hardware Requirements

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

- Two Logical CPUs
- 8 GB of memory (12 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 syncronize:
 - 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 syncronized later.
- The path `/var/spool/squid/` is used as a temporary location for some types of repository syncs and may grow to consume 10s of GB of space before the files are migrated to `/var/lib/pulp`. You may wish to put this on the same partition as `/var/lib/pulp`.
- 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 syncronize:
 - 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 Smart Proxy 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 7	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 install -y yum-utils  
yum-config-manager --disable "*"  
yum-config-manager --enable rhel-7-server-rpms  
yum-config-manager --enable rhel-7-server-optimal-rpms  
yum-config-manager --enable rhel-7-server-extras-rpms
```

```
yum -y localinstall http://fedorapeople.org/groups/katello/releases/yum/3.9/katello/el7/x86_64/katello-repos-latest.rpm  
yum -y localinstall http://yum.theforeman.org/releases/1.20/el7/x86_64/foreman-release.rpm  
yum -y localinstall https://yum.puppetlabs.com/puppetlabs-release-pc1-el-7.noarch.rpm  
yum -y localinstall http://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm  
yum -y install foreman-release-scl python2-django
```

Installation

After setting up the appropriate repositories, update your system:

```
yum -y update
```

Then 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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Smart Proxy Installation

Hardware Requirements

The Smart Proxy server is only supported on x86_64 Operating Systems

- 2 Two Logical CPUs
- 8 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 Smart Proxy services and required ports.

Installation

Install needed packages:

The same yum repositories need to be configured on the Smart Proxy 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-proxy-content package on the Smart Proxy

```
yum install -y foreman-proxy-content python-django
```

Generate Certificates for the Smart Proxies

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

```
foreman-proxy-certs-generate --foreman-proxy-fqdn "myproxy.example.com"\n--certs-tar  "~/myproxy.example.com-certs.tar"
```

In the above example, replace 'myproxy.example.com' with your Smart Proxy'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 Smart Proxy on using whatever method you prefer (e.g. SCP).

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

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

To finish the installation, follow these steps:

1. Ensure that the foreman-installer-katello package is installed on the system.
2. Copy ~/myproxy.example.com-certs.tar to the system myproxy.example.com
3. Run the following commands on the Smart Proxy (possibly with the customized parameters, see `foreman-installer --scenario foreman-proxy-content --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\nsubscription-manager register --org "Default_Organization"\nforeman-installer --scenario foreman-proxy-content\\\n    --foreman-proxy-content-parent-fqdn "katello.example.com"\\\n    --foreman-proxy-register-in-foreman "true"\\\n    --foreman-proxy-foreman-base-url "https://katello.example.com"\\\n    --foreman-proxy-trusted-hosts "katello.example.com"\\\n    --foreman-proxy-trusted-hosts "myproxy.example.com"\\\n    --foreman-proxy-oauth-consumer-key "UVrAZfMaCfBiiWejoUVLYCZHT2xhzuFV"\\\n    --foreman-proxy-oauth-consumer-secret "ZhH8p7M577ttNU3WmUGWASag3JeXKgUX"\\\n    --foreman-proxy-content-certs-tar "/root/myproxy.example.com-certs.tar"\n\nThe full log is at /var/log/foreman-proxy-certs-generate.log
```

Install Smart Proxy

Use the provide installation command from `foreman-proxy-certs-generate`, and tailor for your own purposes as needed. The defaults will give you a Smart Proxy 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.

Select your Operating System: 

```
yum -y install https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm  
yum install -y https://yum.theforeman.org/client/1.20/el7/x86_64/foreman-client-release.rpm
```

Now you are ready to install the client package:

The `katello-host-tools` package reports errata & package profile information, but does not allow you to run remote actions on the clients.

```
yum install katello-host-tools
```

We generally recommend using Foreman Remote Execution or Ansible for remote actions, but we also offer a messaging bus based client that does have some limitations when used with a large number of clients.

```
yum install katello-agent
```

Optionally you can also install `katello-host-tools-tracer` and the client will report processes that need restarting after an update back to the Katello server.

```
yum install katello-host-tools-tracer
```

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.

When provisioning new clients that should use Puppet 5, set a parameter called 'enable-puppet5' to 'true', so the templates know which package to install and where to place the configuration. This parameter can be placed at the host, host group, or another appropriate level of the hierarchy.

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Katello Upgrade

Katello 3.8 supports upgrades from version 3.6 and Puppet version 4. For users transitioning from versions prior to 3.6, first [upgrade to Katello 3.6](#), [upgrade Puppet to version 4](#), and then proceed to upgrade to Katello 3.8 following the instructions below.

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).

To run the script:

```
foreman-rake katello:upgrade_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:

- RHEL7 / CentOS 7:

```
yum update -y http://fedorapeople.org/groups/katello/releases/yum/3.9/katello/el7/x86_64/katello-repos-latest.rpm  
yum update -y http://yum.theforeman.org/releases/1.20/el7/x86_64/foreman-release.rpm  
yum update -y foreman-release-scl
```

Step 4 - Update Packages

Stop the Katello services

```
katello-service stop
```

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 3.9

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

Congratulations! You have now successfully upgraded your Katello to 3.9 For a rundown of what was added, please see [the 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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Smart Proxy 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:

- RHEL7 / CentOS 7:

```
yum update -y http://fedorapeople.org/groups/katello/releases/yum/3.9/katello/el7/x86_64/katello-repos-latest.rpm  
yum update -y http://yum.theforeman.org/releases/1.20/el7/x86_64/foreman-release.rpm
```

Step 3 - Update Packages

Clean the yum cache

```
yum clean all
```

Update packages:

```
yum update -y
```

```
yum install foreman-proxy-content
```

Step 4 - Regenerate Certificates

On the Katello server, regenerate the certificates tarball for your Smart Proxy:

```
foreman-proxy-certs-generate --foreman-proxy-fqdn "myproxy.example.com"\  
--certs-update-all\  
--certs-tar " ~/myproxy.example.com-certs.tar"
```

And copy them to your Smart Proxy:

```
scp ~/myproxy.example.com-certs.tar myproxy.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 3.9

```
foreman-installer --scenario foreman-proxy-content --upgrade\  
--foreman-proxy-content-certs-tar ~/myproxy.example.com-certs.tar  
\  
--certs-update-all --certs-regenerate true --certs-deploy true
```

Congratulations! You have now successfully upgraded your Smart Proxy to 3.9 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/foreman-proxy.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://yum.theforeman.org/client/1.20/el5/x86_64/foreman-client-release.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 3.9 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 3.9 (New England IPA) Release Notes

For the full release notes, see the [Changelog](#).

Features

Modularity Support

Katello 3.9 adds support for operations module streams which include. Syncing module stream information from module streams. Associating module streams to content view environments. Enable/Disable/Install module stream on hosts, including bulk actions and host group actions.

System Purpose Support

For Red Hat Customers we've introduced a new feature called System Purpose to improve the subscription auto-attach functionality. This adds several new attributes that can be set on Content Hosts in addition to Service Level which is now under the System Purpose umbrella. The new attributes are: Role, Usage, and Add Ons. The values for these will come from your Red Hat subscription manifest and can be set on content hosts from the UI or from the new 'syspurpose' command-line interface. Setting these attributes is also possible through the provisioning UI. System Purpose ensures that the best possible subscriptions are attached to your hosts if you are using auto-attach.

Content View Import/Export

Katello 3.9 ships with a new content view version import/export feature. This feature is meant to replace the inter-server synchronization feature. It allows users to export and import content view versions along with associated yum content. Please see the [instructions](#) for more details.

Katello Client Repo Changes

Katello client repos have been removed in favor of the Foreman client repo, which can be found [here](#). Please see [install](#) and [upgrade](#) instructions to switch your clients.

Bug Fixes

This release also include 140 bug fixes, which can be seen [here](#).

Contributors

Adam Ruzicka Amir Fefer Amit Karsale Andrew Kofink Avi Sharvit Bernhard Suttner Chris Brown Chris Duryee Chris Hale Chris Roberts Christine Fouant Daniel Lobato Garcia Eric D. Helms Ido Kanner Ivan Nečas John Mitsch Jonathon Turel Justin Sherrill Lukas Zapletal Marek Hulan Martin Bačovský Matthias Dellweg Michael Johnson Mike McCune Oleh Fedorenko Ondrej Prazak Partha Aji Samir Jha Sean O'Keeffe Shimon Shtein Stephen Benjamin Tim Kächele Timo Goebel Tom McKay Tomas Strachota Walden Raines Zach Huntington-Meath kgaikwad Idjebran lizagilman omkar khatavkar

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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 http://fedorapeople.org/groups/katello/releases/yum/3.9/katello/el6/x86_64/katello-repos-latest.rpm  
yum -y localinstall http://yum.theforeman.org/releases/1.20/el6/x86_64/foreman-release.rpm  
yum -y localinstall http://dl.fedoraproject.org/pub/epel/epel-release-latest-6.noarch.rpm
```

After setting up the appropriate repositories, install Katello:

```
yum -y install tfm-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 with the following details:

- Header:** FOREMAN, Default_Organization, Admin User, Administer.
- Left Sidebar:** Activation Keys.
- Search Bar:** Search... (Showing 0 of 0 (0 Total))
- Action Buttons:** + New Activation Key, Close.
- Form Fields (New Activation Key Dialog):**
 - Name*: research
 - Content Host Limit: Unlimited Content Hosts:
 - Description: This is the activation key used by the research department.
 - Environment: Library (selected), dev, test.
 - Content View: Default Organization View
- Buttons at the bottom:** Cancel, Save.

- **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 attach 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.

The screenshot shows the Foreman web interface. At the top, there's a navigation bar with links for Default Organization, Monitor, Content, Containers, Hosts, Configure, Infrastructure, Administer, and Admin User. Below the navigation is a search bar and a message indicating 1 total result. On the left, a sidebar lists activation keys, with 'research' selected and highlighted in blue. The main content area is titled 'Activation Key: research'. It has tabs for Details, Subscriptions (which is selected), Product Content, Host Collections, and Associations. Under 'Activation Key Type:', there's a section for 'Auto-Attach' with a 'Yes' option and an info box explaining it. Below this is a 'List/Remove' section for subscriptions, showing one entry: 'Red Hat Enterprise Linux Server, Premium (8 sockets) (Up to 4 guests)'. The table includes columns for Quantity (1), Attached (0 out of 25), Type (Physical), Starts (12/31/14), Expires (12/31/15), Support Level, Contract, and Account (5481114). Buttons for Remove, Copy Activation Key, and Close are at the top right.

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

Default_Organization ▾ Monitor ▾ Content ▾ Hosts ▾ Configure ▾ Infrastructure ▾ Administer ▾

Activation Keys

Search... Showing 1 of 1 (1 Total) 0 Selected | Deselect All

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

Default_Organization ▾ Monitor ▾ Content ▾ Hosts ▾ Configure ▾ Infrastructure ▾ Administer ▾

Activation Keys

Search... Showing 1 of 1 (1 Total) 0 Selected | Deselect All

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

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**

Activation Keys

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

0 Selected | Deselect All + New Activation Key

Name

research >

Activation Key: research

Details Subscriptions Product Content Host Collections

Host Collection Management

List/Remove Add

Filter

2 Selected | Deselect All Add Selected

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

Please use [Foreman Maintain](#) for backup and restore functionality. Foreman-maintain is a dependency of Katello starting in 3.8.

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Smart Proxies

What are Smart Proxies?

The Smart Proxy server is a Katello component that provides federated services to discover, provision, control, and configure hosts. Each Katello server includes a Default Smart Proxy, and you may deploy additional Smart Proxies to remote data centers. A Smart Proxy 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 Smart Proxy server is a means to scale out the Katello installation. Organizations can create various Smart Proxies 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 Smart Proxy servers subscribed to that environment. Hosts pull content and configuration from the Katello Smart Proxy servers in their location and not from the central server.

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

What is a Foreman Proxy with Content?

A Katello Smart Proxy 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 Smart Proxy. Larger deployments would have a single Katello server with multiple Smart Proxies attached, with these remote Smart Proxies deployed to various datacenters. Smart Proxies can also be used to scale the number of hosts attached to a single Katello server.

Installation

See [Smart Proxy Installation](#)

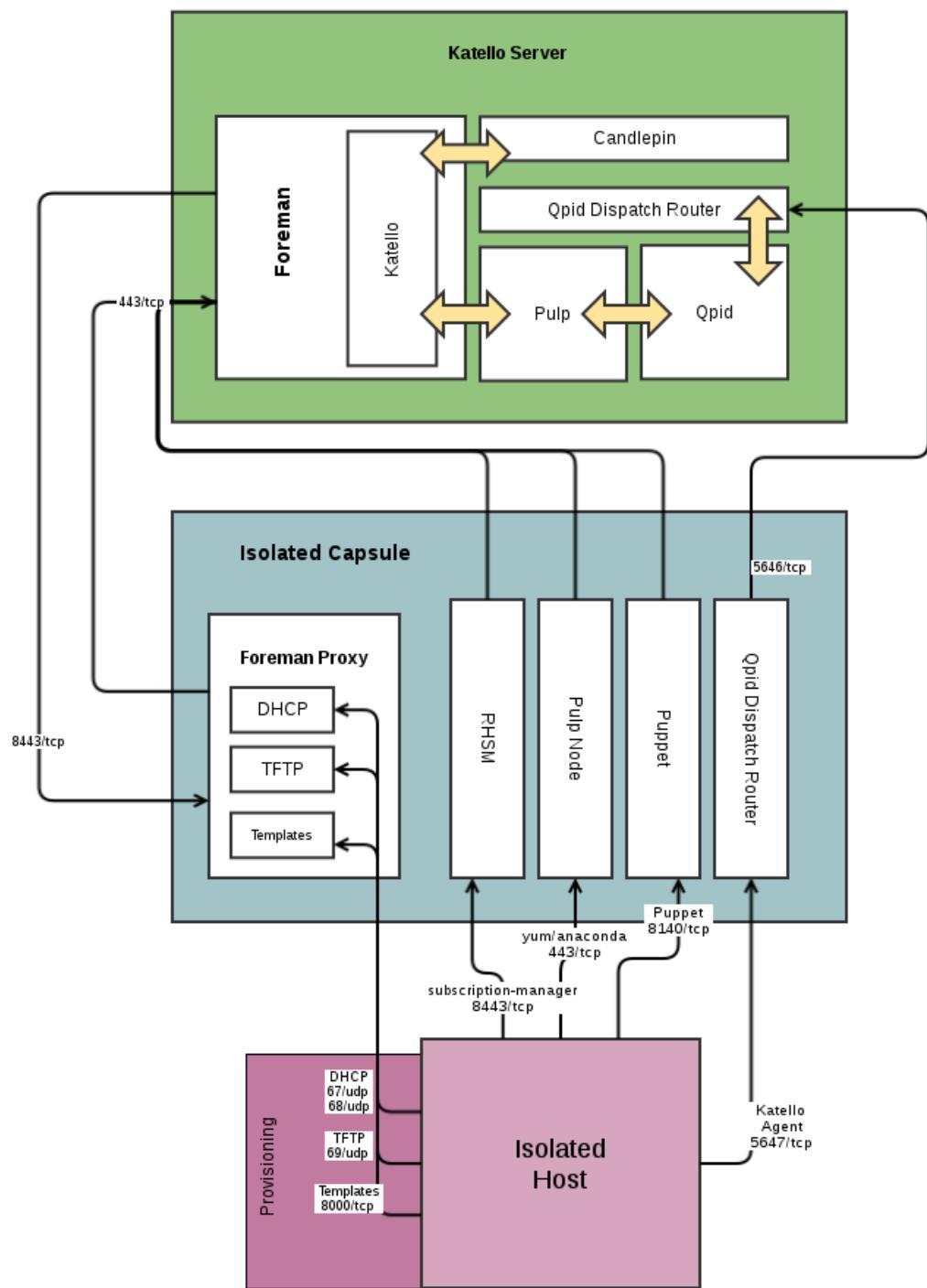
Removal

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

```
katello-remove
```

Smart Proxy Isolation

The goal of Smart Proxy 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 Smart Proxy itself. The following section details the communication clients need to have with a Smart Proxy. 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 Smart Proxies 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 Smart Proxy 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 Smart Proxy 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 Smart Proxy on port 5647/tcp

3 - Puppet & Puppet CA

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

Install Option:

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

Required Connectivity:

- Clients need to communicate with the Smart Proxy 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 Smart Proxy 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 Smart Proxy, and a DHCP server available. While not required, the Smart Proxy can provide the DHCP service. In order for the installer to obtain its kickstart template from the Smart Proxy, 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 Smart Proxy 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 with a blue header bar. The title bar says "New Product". The URL in the address bar is "192.168.122.75:3000/katello/products#/products/new". The main content area has a sidebar on the left labeled "Products" with a "Name" filter. A central modal dialog titled "New Product" is open. It contains fields for "Name" (set to "Epel"), "Label" (set to "Epel"), "GPG Key" (a dropdown menu), "Sync Plan" (a dropdown menu with a "+ New Sync Plan" link), and "Description" (an empty text area). At the bottom of the dialog are "Cancel" and "Save" buttons. The top right corner of the dialog has a "Close" button.

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 recommend 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 "http://dl.fedoraproject.org/pub/epel/6/x86_64".

The screenshot shows the Foreman web interface with the title 'New Repository'. The URL in the browser is 192.168.122.75:3000/katello/products#/products/127/repositories/new. The main navigation bar includes 'MyCompany', 'Monitor', 'Content', 'Hosts', 'Configure', 'Infrastructure', 'Administer', and a user icon for 'Admin User'. Below the navigation is a search bar and a message 'Showing 1 of 1 (1 Total)'. A toolbar at the top right includes '0 Selected | Deselect All', 'Bulk Actions', 'Repo Discovery', and '+ New Product'. On the left, a sidebar titled 'Name' lists 'Epel >'. The main content area is titled 'Product Epel' and shows tabs for 'Details', 'Repositories', and 'Tasks'. Under 'Details', there's a form for adding a new repository with fields: Name* (Epel x86_64), Label* (Epel_x86_64), Type* (yum), URL (http://download-i2.fedoraproject.org/pub/epel/6/x86_64/), Publish via HTTP (checked), and GPG Key (empty dropdown). Buttons for 'Cancel' and 'Save' are at the bottom.

Syncing a Repository

From the web UI, navigate to:

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

The screenshot shows the Foreman web interface for managing repositories. The URL is 192.168.122.75:3000/katello/products#/products/127/repositories/80. The top navigation bar includes 'MyCompany', 'Monitor', 'Content', 'Hosts', 'Configure', 'Infrastructure', 'Administer', and a user icon for 'Admin User'. The main title is 'Products' with a sub-section 'Product Epel'. On the left, a sidebar lists repository names, with 'Epel' selected. The main content area displays the 'Details' tab for 'Product Epel'. It shows basic information like Name (Epel x86_64), Label (Epel_x86_64), Type (yum), URL (http://download-i2.fedoraproject.org/pub/epel/6/x86_64/), Publish via HTTPS (true), Publish via HTTP (unchecked), Published At (http://centos.installer/pulp/repos/MyCompany/Library/custom/Epel/Epel_x86_64), and GPG Key (unchecked). To the right, there are 'Content Counts' for Packages (0), Errata (0), and Package Groups (0). Buttons for 'Sync Now' and 'Remove Repository' are also present. A note at the bottom states 'All dates and times below are relative to this server'.

The progress will be displayed:

The screenshot shows the Foreman interface for viewing task details. The URL is 192.168.122.75:3000/katello/products#/products/127/tasks/fbd1fd1d-8f38-4a4e-aae0-ae4a74df6846. The top navigation bar and sidebar are identical to the previous screenshot. The main title is 'Products' with a sub-section 'Product Epel'. The 'Repositories' tab is selected in the sidebar. The main content area shows 'Task Details' for a task with ID fbd1fd1d-8f38-4a4e-aae0-ae4a74df6846. The task details include Action Type (Synchronize), User (admin), Started At (4/15/14 12:52 PM), Finished At (not shown), Parameters (repository 'Epel x86_64'; product 'Epel'; organization 'MyCompany'), State (running), and Result (pending). Below the task details, a progress bar indicates the sync status. A note at the bottom states 'New packages: 37/10694 (6.68 MB/9.78 GB)'.

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.

The screenshot shows a web browser window titled "Sync Status" from the Foreman interface. The URL is "abed.usersys.redhat.com:3000/katello/sync_management#!=". The top navigation bar includes links for "MyCompany", "Monitor", "Content", "Hosts", "Configure", and "Infrastructure". On the right, there are user and administrator dropdown menus. The main content area is titled "Sync Status" and contains a table with the following data:

PRODUCT	START TIME	DURATION	SIZE (PACKAGES)	RESULT
▼ Epel			0 Bytes	
<input checked="" type="checkbox"/> Epel i386			0 Bytes (0)	
<input checked="" type="checkbox"/> Epel x86_64			0 Bytes (0)	

At the bottom right of the table is a "Synchronize Now" button.

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):

The screenshot shows the Foreman web interface with the title 'New Repository'. The URL is <http://abed.usersys.redhat.com:3000/katello/products#/products/175/repositories/new>. The top navigation bar includes 'MyCompany', 'Monitor', 'Content', 'Hosts', 'Configure', 'Infrastructure', 'Administer', and a user icon for 'Admin User'. A sidebar on the left shows 'Name' (selected), 'Configuration >', and 'Epel'. The main content area is titled 'Product Configuration' with tabs 'Details', 'Repositories' (selected), and 'Tasks'. A sub-section titled '<< Add New Repository' contains fields: 'Name*' (Puppet), 'Label*' (Puppet), 'Type*' (puppet), 'URL' (empty), 'Publish via HTTP' (checked), and 'GPG Key' (empty). Buttons 'Cancel' and 'Save' are at the bottom.

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

The screenshot shows the Foreman web interface with the title 'Repository: Puppet'. The URL is <http://abed.usersys.redhat.com:3000/katello/products#/products/175/repositories/30>. The top navigation bar and sidebar are identical to the previous screenshot. The main content area is titled 'Product Configuration' with tabs 'Details' (selected), 'Repositories', and 'Tasks'. It shows basic information for the 'Puppet' repository: Name (Puppet), Label (Puppet), Type (puppet), URL (empty), Publish via HTTPS (true), Publish via HTTP (checked), Published At (<http://localhost/pulp/repos/MyCompany/Library/custom/Configurati/Puppet>), and GPG Key (empty). It also displays content counts (Puppet Modules: 0) and a 'Sync Now' button. On the right, there is a 'Content Type' section and an 'Upload Puppet Module' form with 'Choose File' and 'Upload' buttons. A note at the bottom states: 'All dates and times below are relative to this server.'

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 the Katello interface with a blue header bar. The title bar says 'New Sync Plan'. The main content area is titled 'Sync Plans' and shows a table with one row. The row has a checkbox labeled 'Name' and the value 'Weekly Sync'. To the right of the table is a 'New Sync Plan' dialog box. The dialog box contains the following fields:

- Name*: Weekly Sync
- Description: (empty)
- Interval: weekly
- Start Date*: 2014-04-06
- Start Time (-0400 GMT)*: 02 : 30 (with up and down arrows for hours and minutes)

At the bottom of the dialog box are 'Cancel' and 'Save' buttons. The 'Save' button is highlighted with a blue background.

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 interface for managing sync plans. The top navigation bar includes links for Sync Plans, MyCompany, Monitor, Content, Hosts, Configure, Infrastructure, Administer, and a user icon for Admin User.

The main page title is "Sync Plans". A search bar shows "Showing 1 of 0 (0 Total)". There are buttons for "0 Selected | Deselect All" and "New Sync Plan".

A sidebar on the left lists "Name" and "Weekly Sync >". The main content area is titled "Sync Plan Weekly Sync". It has tabs for "Details" (selected) and "Products".

Under "Product Management", there are buttons for "List/Remove" and "Add". A filter input field is present. Below these are buttons for "1 Selected | Deselect All" and "Add Selected".

A table lists repositories:

Name	Description	Sync Status	Repositories
Configuration		Never synced	1
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



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



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



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



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 single Content Host, navigate to: Hosts > Content Hosts > Select Content Host > Packages



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



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 Asssignments

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



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:



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:



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 be 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.

The screenshot shows the Foreman web interface. At the top, there's a navigation bar with links for 'content views', 'Monitor', 'Content', 'Hosts', 'Configure', 'Infrastructure', 'Admin User', and 'Administer'. Below the navigation is a search bar and a message indicating 'Showing 3 of 3 (3 Total)'. On the left, there's a sidebar titled 'Content Views' with a list of items: 'Name', 'COMPOSITE', 'Puppet Modules', and 'Yum Repos'. The main area is titled 'New Content View' and contains a form for 'View Details'. The form fields are: 'Name*' (set to 'New Content View'), 'Label*' (set to 'New_Content_View'), and 'Description' (containing the text 'This is my new content view, not sure what it will contain yet'). There's also a checkbox for 'Composite View?' which is unchecked. At the bottom of the dialog are 'Cancel' and 'Save' buttons. The overall layout is clean and modern, typical of a web-based management application.

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

From the CLI, adding a repository:

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

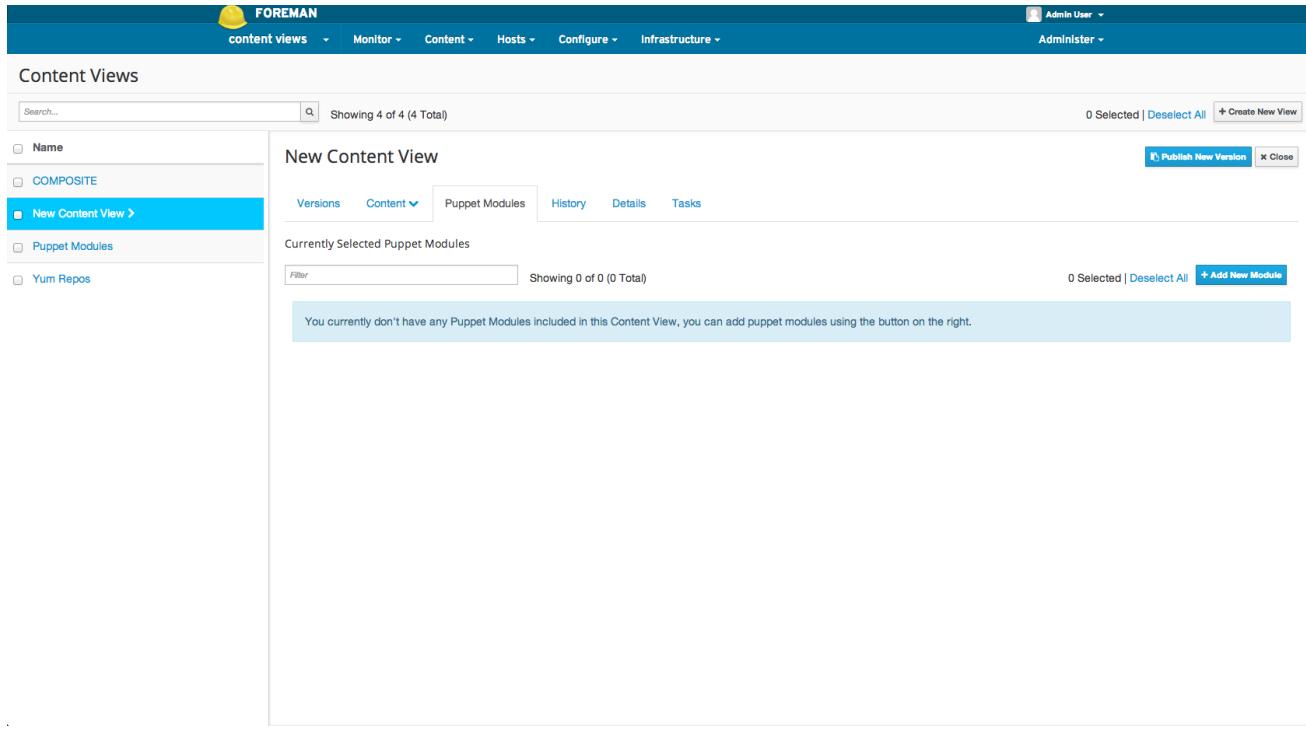
Adding a Puppet Module

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

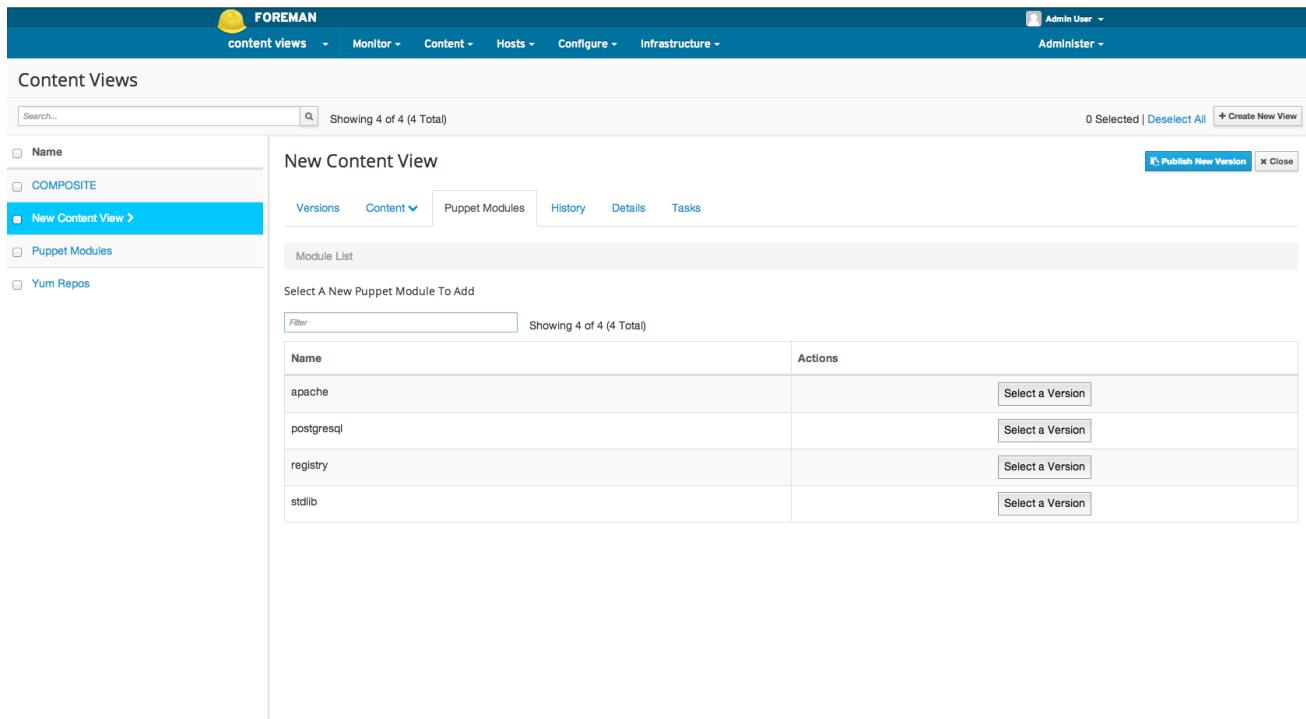
version to get any updated puppet module.

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

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



The screenshot shows the Foreman web interface with the 'content views' menu item selected. In the center, a 'New Content View' dialog is open. The 'Puppet Modules' tab is active. A message at the top right says 'You currently don't have any Puppet Modules included in this Content View, you can add puppet modules using the button on the right.' There is a blue button labeled '+ Add New Module'.



The screenshot shows the Foreman web interface with the 'content views' menu item selected. In the center, a 'New Content View' dialog is open. The 'Puppet Modules' tab is active. A section titled 'Module List' displays a table of available modules:

Name	Actions
apache	Select a Version
postgresql	Select a Version
registry	Select a Version
stdlib	Select a Version

The screenshot shows the Foreman interface for creating a new Content View. The left sidebar has 'New Content View' selected. The main content area is titled 'New Content View' and shows the 'Puppet Modules' tab selected. It displays a table of available Apache modules from puppetlabs, with two rows shown:

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

The screenshot shows the Foreman interface with the 'Content Views' page selected. The 'Puppet Modules' tab is selected in the 'New Content View' dialog. It shows a table with one entry: apache, authored by puppetlabs, with the latest version (1.0.1). Actions buttons for 'Select new version' and 'Remove Module' are visible.

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

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-45173.863cbb
```

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

The screenshot shows the Foreman web interface with the following details:

- Header:** FOREMAN, Admin User, Administer.
- Left Sidebar:** Content Views (selected), Name, COMPOSITE, New Content View (selected), Puppet Modules, Yum Repos.
- Main Content Area:**
 - New Content View:** Versions tab selected, Content, Puppet Modules, History, Details, Tasks.
 - Filters:** Search bar, Showing 0 of 0 (0 Total). A message: "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."
- Buttons:** Publish New Version, + Create New View, + New Filter, Remove Filters.

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)



From the CLI, adding a Content View Filter:

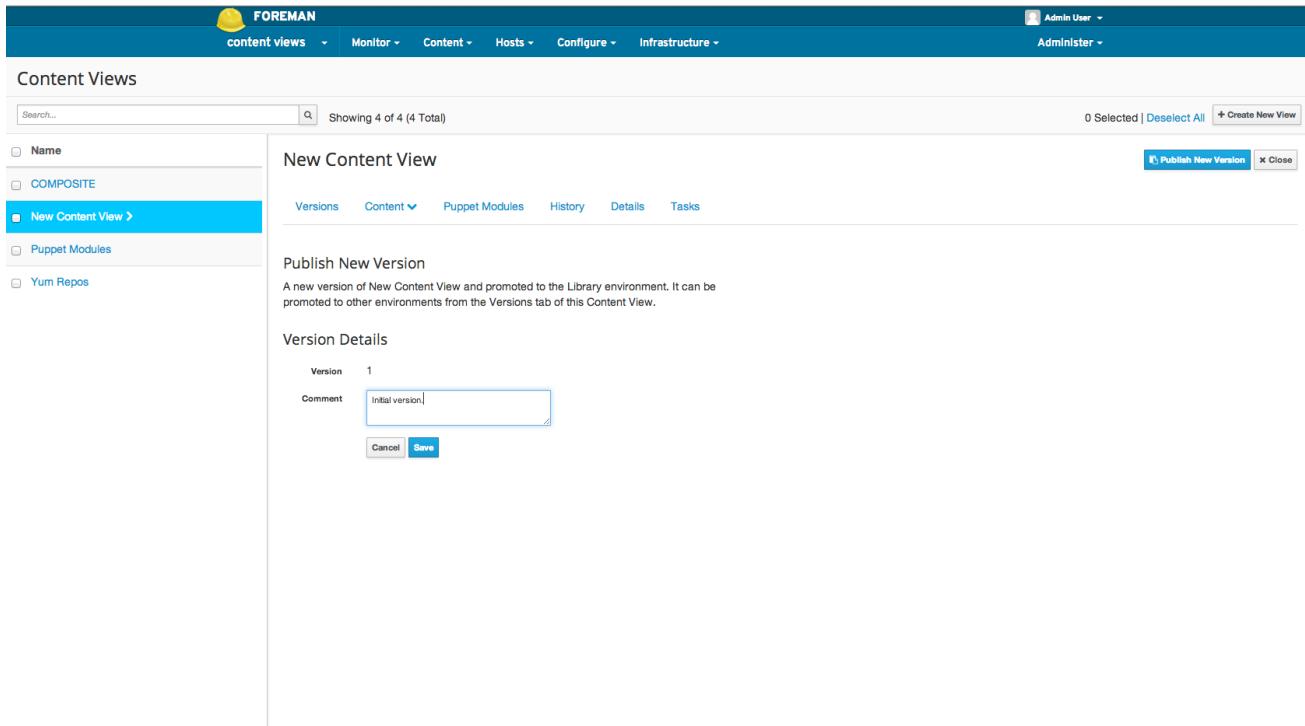
```
hammer content-view filter update \
--organization="Default Organization" \
--name="New Filter" \
--repository-ids=2,3,8
```

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 Foreman web interface with the 'Content Views' page selected. On the left, there's a sidebar with options like 'Name', 'COMPOSITE', 'New Content View >', 'Puppet Modules', and 'Yum Repos'. The main area shows a list of content views with one item selected: 'New Content View'. This item has a sub-dialog titled 'New Content View' with tabs for 'Versions', 'Content', 'Puppet Modules', 'History', 'Details', and 'Tasks'. The 'Content' tab is active, showing a table with one row. The table columns are 'Version', 'Status', 'Environments', 'Content', 'Author', and 'Actions'. The first row is 'Version 1', with the 'Status' column showing a green bar and the text 'Publishing and promoting to 1 environment.' The 'Content' column shows '0 Packages' and '0 Errata'. The 'Actions' column contains a 'Promote' button.

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

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

FOREMAN

content views Monitor Content Hosts Configure Infrastructure

Admin User Administer

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

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)		<input type="button" value="Promote"/>

FOREMAN

content views Monitor Content Hosts Configure Infrastructure

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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

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

New Content View

Version	Status	Environments	Content	Author	Actions
Version 1	Promoting to 1 environment.	• Library • test	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.

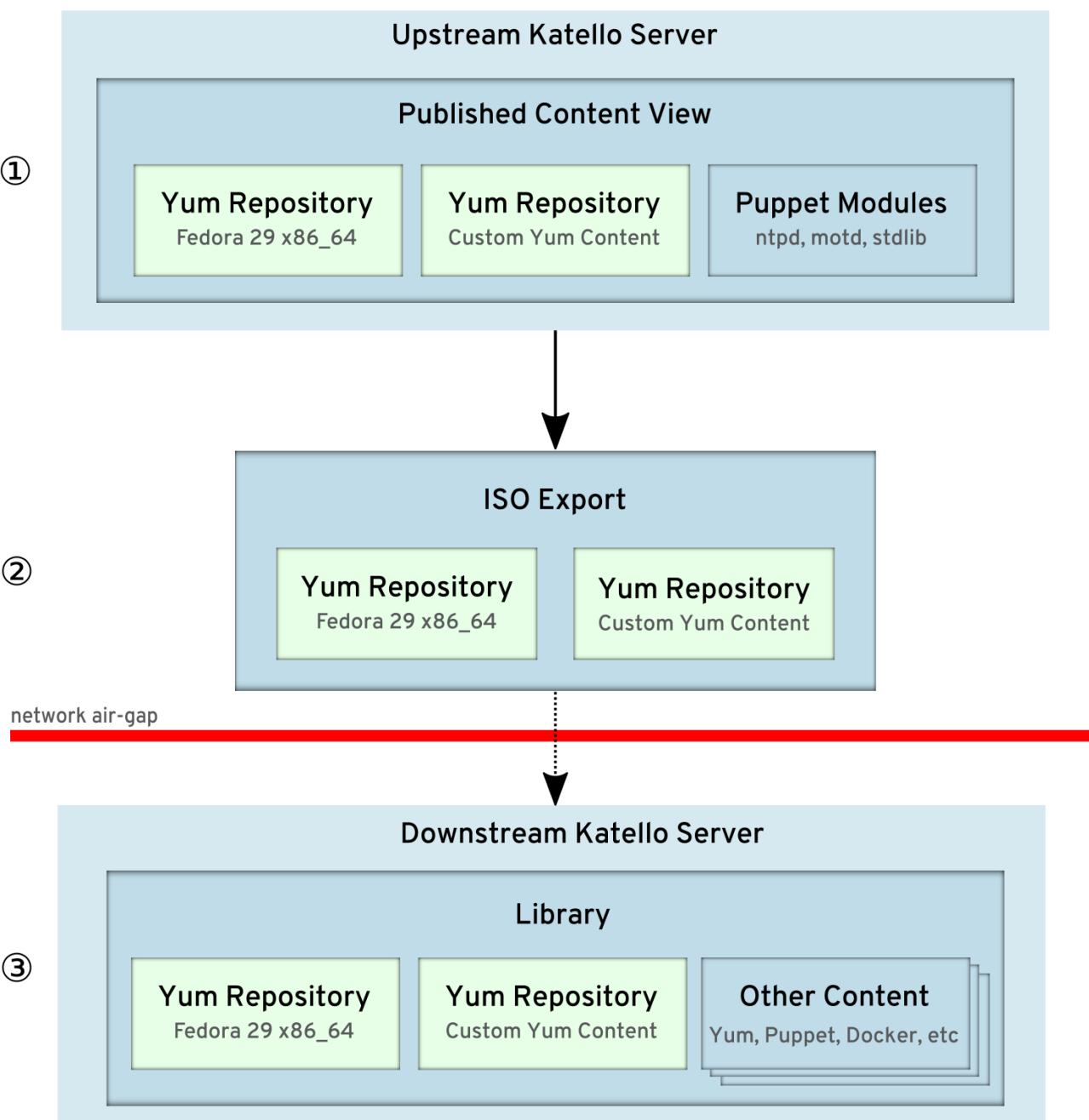
Intro

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 defaults to `/var/lib/pulp/katello_export`. Please be aware that the location needs to be readable and writable by the `foreman` user. SELinux permissions also need to be set on the export location with the type `httpd_sys_rw_content_t` as well as `foreman` user and group ownership.

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 Katello instance. Simply put the export in `/var/www/html/pub/export`, either via copy or symlink. After that, edit your CDN location from the manifest import page to point to “`http://export/path/to/export`” and the Red Hat Repos page will then work as expected, using your exported data. Please be sure to use ‘`http`’ and not ‘`https`’ when altering the CDN url. Katello by default only supports the CA certificate for ‘`cdn.redhat.com`’. This is a [known limitation] (<http://projects.theforeman.org/issues/16392>) that will be addressed in a future version.

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. The top navigation bar includes 'Default Organization', 'Monitor', 'Content', 'Containers', 'Hosts', 'Configure', 'Infrastructure', and 'Administer'. A user icon labeled 'Admin User' is also present. Below the navigation is a search bar and a message indicating 'Showing 2 of 2 (2 Total)'. On the left, there's a sidebar with checkboxes for 'Name', 'Red Hat Enterprise Linux Serv...', and 'Tester' (which is selected). The main content area is titled 'Product Tester' and contains tabs for 'Details', 'Repositories', and 'Tasks'. Under 'Details', a section titled 'Add New Repository' is shown. It has fields for 'Name*' (empty), 'Label*' (empty), and 'Type*' (set to 'docker'). Under 'Sync Information', there's a 'URL' field containing 'https://registry.hub.docker.com' with a descriptive note below it. There's also a 'Upstream Repository Name' field. At the bottom 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-1.docker.io/>.

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 interface with the 'Content Views' page selected. A Content View named 'Test' is currently active. The 'Docker Content' tab is selected. Below it, a table lists several Docker repositories:

Name	Product	Last Sync	Sync State	Content
business	Tester	N/A	N/A	10 Docker Images 5 Docker Tags
busybox	Tester	2/2/15 1:18 PM	Success	10 Docker Images 5 Docker Tags
redis	Tester	1/19/15 5:10 PM	Success	179 Docker Images 19 Docker Tags
tester	Tester	2/17/15 3:40 PM	Success	12 Docker Images 1 Docker Tags
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.

Docker Tags



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

[Default Organization](#) ▾ [Monitor](#) ▾ [Content](#) ▾ [Containers](#) ▾ [Hosts](#) ▾ [Configure](#) ▾ [Infrastructure](#) ▾ [Administer](#) ▾

Admin User

Docker Tags

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

Name	redis:latest			<input type="button" value="x Close"/>
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				

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/Smart Proxy. 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 additional 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 of how the Foreman/Katello service sends email is located in [Administer > Settings > Email](#).

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".

The screenshot shows the Foreman web interface with a blue header bar. On the left, there's a yellow user icon and the word 'FOREMAN'. To the right of the user icon are dropdown menus for 'Default Organization', 'Monitor', 'Content', 'Containers', 'Hosts', 'Configure', and 'Infrastructure'. On the far right, it says 'Admin User' with a dropdown arrow. Below the header, the title 'Edit User' is centered. Underneath the title, there's a navigation bar with tabs: 'User' (which is active and highlighted in blue), 'Mail Preferences', 'Locations', 'Organizations', and 'Roles'. The main content area has a section titled 'General'. Under 'General', there's a sub-section titled 'Notifications'. It contains five entries, each with a label, a dropdown menu for frequency ('Weekly', 'Subscribe', or 'No emails'), and a brief description. At the bottom of the form are two buttons: 'Cancel' and 'Submit'.

Notification Type	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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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

Errata ID	Title	Type	Affected Content Hosts	Updated
RHSA-2014:1984	Important: bind security update	▲ Security Advisory - Important	0	12/11/14
RHSA-2014:1983	Important: xorg-x11-server security update	▲ Security Advisory - Important	0	12/10/14
RHBA-2014:1970	dovecot bug fix update	※ Bug Fix Advisory	0	12/8/14
RHSA-2014:1974	Important: rpm security update	▲ Security Advisory - Important	0	12/8/14
RHBA-2014:1964	selinux-policy bug fix update	※ Bug Fix Advisory	0	12/7/14
RHBA-2014:1965	curl bug fix update	※ Bug Fix Advisory	0	12/7/14
RHBA-2014:1967	sssd bug fix update	※ Bug Fix Advisory	0	12/7/14
RHBA-2014:1961	system-config-firewall bug fix update	※ Bug Fix Advisory	0	12/4/14
RHSA-2014:1919	Critical: firefox security update	▲ Security Advisory - Critical	0	12/1/14
RHEA-2014:1948	Important: nss, nss-util, and nss-softokn security, bug fix, and enhancement update	▲ Security Advisory - Important	0	12/1/14
RHEA-2014:1918	oprofile enhancement update	▣ Product Enhancement Advisory	0	11/30/14
RHBA-2014:1909	lvm2 bug fix update	※ Bug Fix Advisory	0	11/25/14
RHSA-2014:1911	Moderate: ruby security update	▲ Security Advisory - Moderate	0	11/25/14
RHBA-2014:1886	mdadm bug fix update	※ Bug Fix Advisory	0	11/23/14
RHBA-2014:1884	cyrus-sasl bug fix update	※ Bug Fix Advisory	0	11/19/14
RHBA-2014:1883	webkitgtk and gimp bug fix update	※ Bug Fix Advisory	0	11/19/14
RHBA-2014:1875	device-mapper-multipath bug fix update	※ Bug Fix Advisory	1	11/18/14
RHBA-2014:1867	nss-softokn bug fix update	※ Bug Fix Advisory	0	11/17/14
RHEA-2014:1869	new packages: kmod-oracleasm	▣ Product Enhancement Advisory	0	11/19/14
RHEA-2014:1870	new packages: libtiff and libtiff-devel	▲ Security Advisory - Moderate	0	11/19/14

View Errata Details

To view the details of an Errata:

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

The screenshot shows the Foreman web interface. At the top, there's a navigation bar with links for Default Organization, Monitor, Content, Containers, Hosts, Configure, Infrastructure, Administer, and a user dropdown. Below the navigation is a search bar and a message indicating 40 of 2809 total errata. A sidebar on the left lists various errata IDs, with RHSA-2014:1948 selected and highlighted in blue. The main content area displays detailed information about RHSA-2014:1948, including its ID, type (Security Advisory), severity (Important), and last update date (12/1/14). It also includes a 'Topic' section describing the update as important for nss, nss-util, and nss-softoken packages. A 'Description' section provides technical details about the TLS Fallback Signature Suite Value (TLS_FALLBACK_SCSV) update. At the bottom right of the main content area is a 'Close' button.

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.

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Default Organization ▾ Monitor ▾ Content ▾ Containers ▾ Hosts ▾ Configure ▾ Infrastructure ▾ Administer ▾

Errata

Search... 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

Name	OS	Environment	Content View
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.

FOREMAN

Default Organization ▾ Monitor ▾ Content ▾ Containers ▾ Hosts ▾ Configure ▾ Infrastructure ▾ Administer ▾

Errata

Search... 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**

Repositories Containing Errata RHSA-2014:1948

Library Default Organization View

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

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

The screenshot shows the Foreman web interface under the 'Content' tab. In the left sidebar, the 'Errata' section is selected. On the main page, an erratum titled 'RHSA-2014:1948' is highlighted with a blue background. At the top right, there are filters for 'Applicable' and 'Installable' status, and a search bar showing 'Showing 19 of 19 (19 Total)'. Below the search bar, there are buttons for '1 Selected' and 'Apply Errata'. The central area displays the details of the selected erratum, including its ID and a note about security updates. Below this, the 'Content Hosts' tab is active, showing a list of hosts. One host, 'walden-rhel7.rdu.redhat.com', is selected and shown in a detailed view table. The table has columns for Name, OS, Environment, and Content View. The host's details show it is a Red Hat Enterprise Linux Server 7.0 host in the 'dev' environment, assigned to the 'RHEL' content view. There is also a 'Filter by Environment' dropdown and a 'Search...' field.

Errata

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

Errata ID
<input checked="" type="checkbox"/> RHSA-2014:1948 ➤
<input type="checkbox"/> RHBA-2014:1875
<input type="checkbox"/> RHEA-2014:1866
<input type="checkbox"/> RHEA-2014:1733
<input type="checkbox"/> RHBA-2014:1637
<input type="checkbox"/> RHBA-2014:1515
<input type="checkbox"/> RHBA-2014:1426
<input type="checkbox"/> RHBA-2014:1378
<input type="checkbox"/> RHBA-2014:1376
<input type="checkbox"/> RHEA-2014:1472
<input type="checkbox"/> RHEA-2014:1532
<input type="checkbox"/> RHEA-2014:1530
<input type="checkbox"/> RHBA-2014:1384
<input type="checkbox"/> RHBA-2014:1555
<input type="checkbox"/> RHBA-2014:1459
<input type="checkbox"/> RHBA-2014:1590
<input type="checkbox"/> RHEA-2014:1500
<input type="checkbox"/> RHBA-2014:1362

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

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

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"/> RHSA-2014:1948 ➤	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"/> RHBA-2014:1875	device-mapper-multipath bug fix update	 Bug Fix Advisory	1 Applicable, 1 Installable	11/18/14
<input type="checkbox"/> RHEA-2014:1866	tzdata enhancement update	 Product Enhancement Advisory	1 Applicable, 1 Installable	11/16/14
<input type="checkbox"/> RHEA-2014:1733	tzdata enhancement update	 Product Enhancement Advisory	1 Applicable, 1 Installable	10/28/14
<input type="checkbox"/> RHBA-2014:1637	at bug fix update	 Bug Fix Advisory	1 Applicable, 1 Installable	10/14/14
<input type="checkbox"/> RHBA-2014:1515	audit bug fix and enhancement update	 Bug Fix Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> RHBA-2014:1426	openldap bug fix and enhancement update	 Bug Fix Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> RHBA-2014:1378	nss bugfix and enhancement update	 Bug Fix Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> RHBA-2014:1376	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"/> RHEA-2014:1472	elfutils bug fix and enhancement update	 Product Enhancement Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> RHEA-2014:1532	libnl3 enhancement update	 Product Enhancement Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> RHEA-2014:1530	new packages: json-c	 Product Enhancement Advisory	1 Applicable, 1 Installable	10/13/14
<input type="checkbox"/> RHBA-2014:1384	subscription-manager bug fix and	Bug Fix Advisory	1 Applicable, 1 Installable	10/13/14

FOREMAN

Default Organization ▾ Monitor ▾ Content ▾ Containers ▾ Hosts ▾ Configure ▾ Infrastructure ▾ Administer ▾

Errata

All Repositories Applicable Installable
Search... Showing 19 of 19 (19 Total)

1 Selected

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

Apply Errata

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

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

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

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Errata

All Repositories Applicable Installable
Showing 19 of 19 (19 Total)

1 Selected

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

Apply Errata

[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.

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Content Credentials

Content Credentials can be associated with Katello Products and Repositories. Two types of Content Credentials are supported, each having a distinct purpose:

PGP Keys

PGP Keys are used by Content Hosts in order to verify the signature of packages that have been retrieved from a Repository and ensure they haven't been corrupted. For more information on PGP Keys see [The GNU Privacy Guard](#).

SSL Certificates

SSL Certificates are used by the Katello server to sync content from upstream repositories that require client SSL authentication.

Using Content Credentials

- [Create a Content Credential](#)
- [Associate Content Credential with a Product](#)
- [View Associated Products](#)
- [View Associated Repositories](#)

Create a Content Credential

To create a new Content Credential:

- navigate to Content > Content Credentials
- click **Create Content Credential**
- Enter a Name and select a Type
- You may either upload your Credential or paste its content into the text area.

When creating SSL Certificates for Products or Repositories that require them, a separate credential must be created for the CA, cert, and key respectively.

The screenshot shows the 'Create Content Credential' page in the Foreman interface. The left sidebar has 'Content' selected. The main form has 'Name' set to 'My GPG Key' and 'Type' set to 'GPG Key'. The 'Content Credential Contents' field contains a long string of PGP public key text. At the bottom, there are 'Choose File' and 'Upload Content Credential file' buttons, and 'Save' and 'Cancel' buttons.

Associate Content Credential with a Product

To add a Content Credential to a Product:

Note that adding a Credential to a Product adds it to all current and future repositories unless a repository already has a Credential assigned. The Credential currently assigned to a Repository can be modified or overridden from the detail view of the repository.

- navigate to Content > Products
- select the desired Product from the list

- click **Details**
- click the edit icon on the GPG Key, SSL CA Cert, SSL Client Cert, or SSL Client Key field
- select the desired Content Credential

The steps for adding a Credential to a Repository are the same but performed from the repository's detail view.

Katello

Products > Katello

Details Repositories Tasks

Basic Information

Name:	Katello
Label:	Katello
GPG Key:	My GPG Key

Sync Status

Sync Plan:	Synced manually, no interval set.
Sync Interval:	(Local Time)
Last Sync:	Synced manually, no interval set.
Next Sync:	No sync information available.
Sync State:	

SSL CA Cert:
SSL Client Cert:
SSL Client Key:
Description:
Number of Repositories: 1
Active Tasks: 0

Save Cancel

View Associated Products

To view all Products that have been assigned a Content Credential:

- navigate to Content > Content Credentials
- select the desired Credential from the list
- click **Products**

My GPG Key

Content Credential > My GPG Key > Products

Products Details Repositories

Filter...

Name	Used as	Repositories
Katello	GPG Key	1

View Associated Repositories

To view all Repositories that have been assigned a Content Credential:

- navigate to Content > Content Credentials

- select the desired Credential from the list
- click **Repositories**

The screenshot shows the Foreman web interface. The left sidebar has links for Monitor, Content, Hosts, Configure, Infrastructure, Administer, and Toolbox. The main content area shows the path: Content Credential > SSL-cert > Repositories. There are tabs for Details, Products, and Repositories, with Repositories selected. A 'Filter...' input field is present. A table lists one repository:

Name	Product	Type	Used as
Foreman 1.20	Foreman	yum	SSL Client Cert

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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. At the top, there's a navigation bar with the Foreman logo, user information ('Admin User'), and links for Default_Organization, Monitor, Content, Hosts, Configure, Infrastructure, and Administer. Below the navigation is a search bar and a link to 'New Host Collection'. The main area is titled 'Host Collections' and shows a table with one row: 'Showing 0 of 0 (0 Total)'. A modal window titled 'New Host Collection' is open, prompting for 'Name*' (with 'research' entered), 'Content Host Limit' (with 'Unlimited Content Hosts' checked), and a 'Description' field (empty). At the bottom of the modal are 'Cancel' and 'Save' buttons.

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's a navigation bar with links for Monitor, Content, Hosts (which is currently selected), Configure, and Infrastructure. On the right, it shows 'Admin User' and 'Administrator'. Below the navigation is a search bar and a message indicating 'Showing 1 of 1 (1 Total)'. There's a button to 'New Host Collection'. The main area is titled 'Host Collections' and shows a list of collections. One collection, 'research', is highlighted with a blue background. Underneath it, there are tabs for 'Details', 'Content Hosts' (which is underlined in blue), and 'Collection Actions'. Below these tabs are buttons for 'List/Remove' and 'Add'. A search bar and message 'Showing 2 of 2 (2 Total) Content Hosts' are present. The list of hosts includes columns for Name, Environment, and Content View. Both 'host1.example.com' and 'host2.example.org' have their checkboxes checked.

Name	Environment	Content View
host1.example.com	Library	Default Organization View
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**

The screenshot shows the Foreman web interface. At the top, there's a navigation bar with links for Default_Organization, Monitor, Content, Hosts, Configure, Infrastructure, Administer, and a user icon for Admin User. The main area is titled "Host Collections". A search bar at the top left shows "Search..." and a result count of "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 has a "Name" section with a selected item "research >". The main content area is titled "Host Collection: research". It has tabs for "Details", "Content Hosts" (which is selected), and "Collection Actions". Under "Content Hosts", there are buttons for "List/Remove" and "Add". A search bar shows "Showing 2 of 2 (2 Total) Content Hosts".

A modal window titled "Copy" is open, asking for a "New Name:" with the value "development". It has "Create" and "Cancel" buttons.

Below the modal, a table lists content hosts:

Name	Environment	Content View
host1.example.com	Library	Default Organization View
host2.example.org	Library	Default Organization View

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

Details Content Hosts Collection Actions

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

- o [Package Installation, Removal, and Update](#)
- o [Errata Installation](#)
- o [Host Collection Membership](#)
- o Change assigned Environment or Content View

Remove  Copy Collection 

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



Lifecycle Environment Paths

Environment Path



+ New Environment Path

Close

Create Environment

Name*

Label*

Description

Creating a lifecycle environment path

Click on the New Environment Path



Lifecycle Environment Paths

Environment Path



+ New Environment Path

Close

Create Environment

Name*

Label*

Description



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Default_Organization ▾ Monitor ▾ Content ▾ Hosts ▾ Configure ▾ Infrastructure ▾

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Lifecycle Environment Paths

Create Successful.

Environment Path

Library > Dev2 > +

Library > Dev > QA > Prod > +

View/Updating environment name

Click on the name of the environment.

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Default_Organization ▾ Monitor ▾ Content ▾ Hosts ▾ Configure ▾ Infrastructure ▾

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Lifecycle Environment Paths

+ New Environment Path

Environment Path

Library > Dev2 > +

Library > Dev > QA > Prod > +

Environment Dev

Name: Dev

Label: Dev

Description:

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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:

The screenshot shows the Foreman web interface under the 'Products' section. A product named 'Puppet' is selected. On the right, a modal window titled 'Product Puppet' is open, showing the 'Repositories' tab. Inside, a form for adding a new repository is filled out with the following details:

- Name: forge
- Label: forge
- Type: puppet
- URL: https://forge.puppetlabs.com/

At the bottom of the modal are 'Cancel' and 'Save' buttons. The 'Save' button is highlighted in blue, indicating it is the active button.

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. If you have SELinux enabled, in order to sync from the file system, you'll need to apply a label to the files in order for the system to access them. Two options are `httpd_sys_r_content_t` or `pulp_tmp_t`. Note: if you choose `httpd_sys_r_content_t` then the webserver can also read the files so that may or may not be good. One way to apply these labels would be to use the `chcon` command.

Next, 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 to 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**

The screenshot shows the Foreman web interface. At the top, there's a header with the Katello logo, a search bar, and navigation links for 'Monitor', 'Content', 'Hosts', 'Configure', and 'Infrastructure'. On the right, it shows 'Admin User' and 'Administrator' dropdowns. Below the header, the main title is 'Subscriptions'. A search bar and a 'Manage Manifest' button are visible. On the left, a sidebar has a 'Consumed' section. The main content area is titled 'Subscription Manifest' with a 'Close' button. It contains tabs for 'Details', 'Actions', and 'Import History', with 'Import History' currently selected. Under 'Red Hat Provider Details', it shows a repository URL: 'Repository https://cdn.redhat.com' with a checked checkbox. Below that is a section for 'Subscription Manifest' with tabs for 'Upstream', 'Subscription', 'Management', and 'Application', where 'Upstream' is selected. It shows 'No subscription manifest imported'. There's a 'Choose File' button for 'manifest.zip' and an 'Upload' button. At the bottom, there's a 'Manifest History' section with columns for 'Message' and 'Time'.

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

ECME Organization ▾ Monitor ▾ Content ▾ Hosts ▾ Configure ▾ Infrastructure ▾ Administer ▾

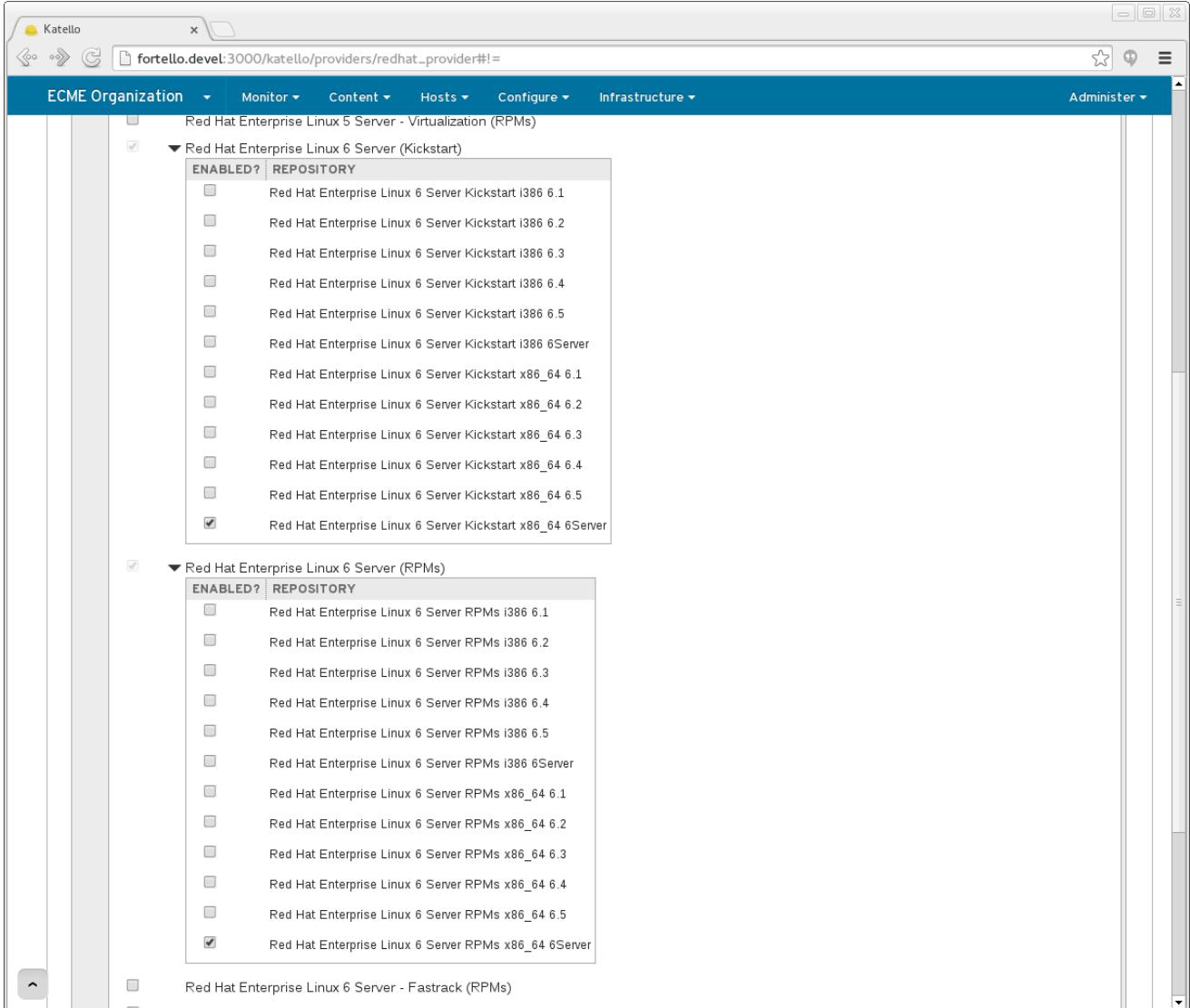
Expand each Red Hat Product below to examine the different repository sets available. When enabling a repository set, the different repositories within are discovered and may be enabled individually. X

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**

The screenshot shows the Foreman Sync Status page. At the top, there's a header with the Foreman logo, navigation links for ECME Organization, Monitor, Content, Hosts, Configure, Infrastructure, and Administerer, and a user dropdown for Admin User. Below the header is a title "Sync Status". To the right of the title are buttons for "Collapse All", "Expand All", "Select None", "Select All", and a checkbox labeled "Only show syncing.". A table follows, with columns: PRODUCT, START TIME, DURATION, SIZE (PACKAGES), and RESULT. The table data is as follows:

PRODUCT	START TIME	DURATION	SIZE (PACKAGES)	RESULT
Red Hat Enterprise Linux Server			0 Bytes	
6Server				
x86_64				
Red Hat Enterprise Linux 6 Server Kickstart x86_64 6Server			0 Bytes (0)	
Red Hat Enterprise Linux 6 Server RPMs x86_64 6Server			0 Bytes (0)	

A "Synchronize Now" button is located at the bottom right of the table.

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.

New Sync Plan

fortello.devel:3000/katello/sync_plans#/new

FOREMAN

ECME Organization ▾ Monitor ▾ Content ▾ Hosts ▾ Configure ▾ Infrastructure ▾ Administer ▾

Sync Plans

Search... Showing 0 of 0 (0 Total) 0 Selected | Deselect All New Sync Plan

New Sync Plan

Name* Weekly Sync

Description

Interval weekly

Start Date* 2014-04-15

Start Time (-0400 GMT)*
17 : 06

Cancel Save

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

The screenshot shows the Foreman interface for managing sync plans. The top navigation bar includes links for Sync Plans, ECME Organization, Monitor, Content, Hosts, Configure, Infrastructure, and Administer. The main title is "Sync Plans". A search bar shows "Showing 1 of 0 (0 Total)". On the left, a sidebar lists "Name" and "Weekly Sync". The main content area is titled "Sync Plan Weekly Sync" and contains tabs for "Details" and "Products". Under "Product Management", there are "List/Remove" and "Add" buttons, and a "Filter" input field. A table lists products with columns for Name, Description, Sync Status, and Repositories. One entry is shown: "Red Hat Enterprise Linux Server" with "Never synced" status and 2 repositories.

Name	Description	Sync Status	Repositories
Red Hat Enterprise Linux Server		Never synced	2

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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SUSE Content

Katello can be used to manage content associated with SUSE products based upon contents mirrored via the smt tool. This includes content such as RPMs, errata.

Definitions

- Repository - Collection of content (either rpm).
- 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:

- Set up SUSE account and smt server
- Set up the smt mirroring and Content
- Create Products and Repositories

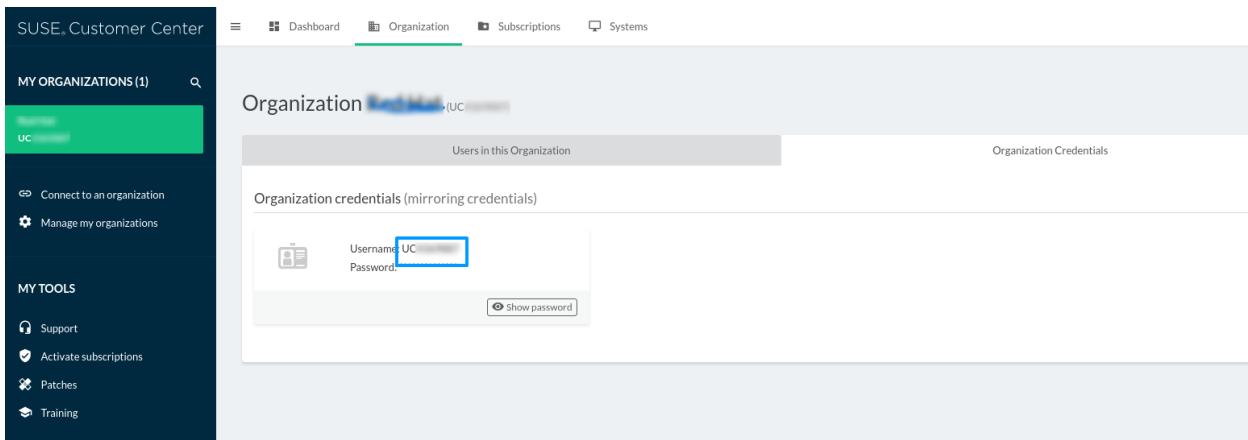
Set up SUSE account and SMT server

Assuming you have an SCC account, setup the SMT server, [click here](#) for more documentation.

- Install smt

```
# zypper install smt  
# yast smt-server
```

- A TUI will pop up and you are going to have to [add credentials from your account](#), found in scc.suse.com, as shown in screenshot below



- Click ok and proceed with the steps provided, it will finish up and exit

Set up the SMT Content and mirroring

On a SLES 12 Box

- Sync repo data
- ```
smt-sync
```
- List Repositories
- ```
# smt-repos
```
- Install the repositories you need to mirror via the smt-repos -e flag. For example to mirror SLES12-SP3-Pool
- ```
smt-repos -e SLES12-SP3-Pool
```
- Check the enabled repos
- ```
# smt-repos -o
```
- Mirror the repositories
- ```
smt-mirror
```
- This should install an apache2 on that host

```
service apache2 restart
```

You should be able to navigate to the mirror by browsing to <http://<fqdn>/repo/>

## Create Products and Repositories

- Follow the steps listed [here](#) to create Products and Repositories
- Follow the steps listed on the same link as above to create a yum repository with the repository url pointing to the appropriate location. For example [http://<fqdn>/repo/SUSE/Products/SLE-SERVER/12-SP3/x86\\_64/product/](http://<fqdn>/repo/SUSE/Products/SLE-SERVER/12-SP3/x86_64/product/)

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## Setup Remote Databases in Foreman with

# Katello Plugin Installed

Foreman with Katello plugin can be installed with remote databases for both postgresql and mongo. These instructions are for a Foreman with Katello plugin server, where remote databases are currently supported. This guide will refer to the server as "Foreman", with the assumption that the Katello plugin is installed.

## High level

There are two ways to deploy Foreman with remote databases:

1. [Fresh install](#)
  - prepare Postgres server with databases for Foreman and Candlepin and dedicated users owning them
  - prepare Mongo DB with user owning the pulp\_database
  - prepare box where the Foreman will be installed and make sure the databases are accessible from the box
  - run foreman-installer with right parameters pointing to the databases
2. [Migration of existing Foreman installation](#)
  - prepare Postgres server with databases for Foreman and Candlepin and dedicated users owning them
  - prepare Mongo DB with user owning the pulp\_database
  - make sure the databases are accessible from the box where Foreman is installed
  - shut down the services except the dbs you want to move (mongod, postgresql)
  - dump the DBs
  - restore the DBs on remote servers
  - run foreman-installer with right parameters pointing to the databases. It re-configures the databases and start all the services with new DB locations

In either scenario, both of the databases don't have to be remote. You can opt to use only a remote mongo database or only a remote postgresql database. Both postgresql and mongo databases can be on the same host, but this isn't recommended due to the amount of resources mongo can use.

## Prepare remote Postgres

GOAL: To use remote Postgres database with Foreman we have to:

- be able to access the databases from foreman box
- the database user we use to connect to the database needs to own the database, i.e. it can create, alter and delete the tables, indexes and constraints. Note it is not required to be able to create the database itself.

## Install Postgres

Warning: This is just minimal testing setup which is not suitable for production, please adjust the settings to your environment as needed.

Assume our postgres server has hostname `postgres.example.com`.

First, we install postgresql.

```
yum install -y postgresql-server postgresql-contrib
postgresql-setup initdb
systemctl enable --now postgresql
```

Now we need to make Postgres listen to inbound connections, please adjust these parameters to your own networking and security requirements.

Edit `/var/lib/pgsql/data/postgresql.conf`. Uncomment `listen_address` and modify its value to look like:

```
listen_address = "*"
```

The next step we need to take is to add a proper client authentication for remote client to our postgres server. To achieve the same, edit `/var/lib/pgsql/data/pg_hba.conf`. Append the following line at the end of the file

```
host all all <katello.example.com ip>/24 md5
```

Now restart the postgres service for changes to take effect

```
systemctl restart postgresql
```

## Create the databases

Switch the user role to postgres and start postgres client

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

Once inside the client, we need to create two databases and dedicated roles, one for foreman and one for candlepin.

```
CREATE USER "foreman" WITH PASSWORD '<FOREMAN_PASSWORD>';
CREATE USER "candlepin" WITH PASSWORD '<CANDLEPIN_PASSWORD>';
CREATE DATABASE foreman OWNER foreman;
CREATE DATABASE candlepin OWNER candlepin;
```

## Test it works

From `katello.example.com` test the DB is accessible:

```
PGPASSWORD='<FOREMAN_PASSWORD>' psql -h postgres.example.com -p 5432 -U foreman -d foreman -c "SELECT 1 as ping"
```

```
PGPASSWORD='<CANDLEPIN_PASSWORD>' psql -h postgres.example.com -p 5432 -U candlepin -d candlepin -c "SELECT 1 as ping"
```

If there are no errors we are done with database preparation.

## Prepare remote Mongo

GOAL: To use remote Mongo database with Foreman we have to:

- be able to access the databases from foreman box
- the database user we use to connect to the database needs to own the database

## Install Mongo DB

Warning: This is just minimal testing setup which is not suitable for production.

Assume our Mongo server has hostname `mongo.example.com`. Install and enable Mongo server

```
yum install -y centos-release-scl
yum install -y rh-mongodb34-syspaths
```

Enable authentication in `/etc/mongod.conf`

```
auth=true
```

Enable and start the service

```
systemctl enable --now mongod
```

## Create Pulp user and database

```
mongo admin -u admin -p admin --eval "db.createUser({user:'pulp',pwd:'<PULP_PASSWORD>',roles:[{role:'dbOwner', db:'pulp_database'}, {role: 'readWrite', db: 'pulp_database'}]})"
```

## Test it works

From `katello.example.com` test the mongo DB is accessible:

```
mongo --host mongo.example.com -u pulp -p <PULP_PASSWORD> --port 27017 --eval 'ping:1' pulp_database
```

If there are no errors we are done with database preparation.

## Fresh install

### Install katello package

We assume the box where the Foreman server will be installed has hostname `katello.example.com`.

Follow the [documentation](#) to install the `katello` package and **do not run foreman-installer**. We need to use the remote database flags with the installer. Use the following steps once the katello rpm is installed.

## Prepare remote databases

Follow the instructions to [prepare remote mongo](#) and [prepare remote postgres](#) to make the remote database servers ready for installation.

## Run the installer

To install and configure Foreman we just need to run

```
foreman-installer --scenario katello \
--foreman-db-host postgres.example.com \
--foreman-db-password <FOREMAN_PASSWORD> \
--foreman-db-database foreman \
--foreman-db-manage false \
--katello-candlepin-db-host postgres.example.com \
--katello-candlepin-db-name candlepin \
--katello-candlepin-db-password <CANDLEPIN_PASSWORD> \
--katello-candlepin-manage-db false \
--katello-pulp-db-username pulp \
--katello-pulp-db-password <PULP_PASSWORD> \
--katello-pulp-db-seeds "mongo.example.com:27017" \
--katello-pulp-db-name pulp_database \
--katello-pulp-manage-db false
```

Note: for more related options and tips on SSL configuration see [Full list of options](#)

## Migration of existing Foreman

Migrating an existing installation to remote databases can take time, so plan for some outage time (length depending on database size) while a backup is taken and the databases are migrated.

In this example, we assume that Foreman was installed and is running on `katello.example.com`.

## Prepare remote databases

Follow the instructions to [prepare remote mongo](#) and [prepare remote postgres](#) to make the remote database servers ready for migration.

## Stop the Foreman server

Stop the Foreman related services to minimize risk of the data changes during the migration

```
katello-service stop
systemctl start postgresql mongod
```

## Dump databases

Dump the local databases

```
foreman-maintain backup online --skip-pulp-content --preserve-directory -y /tmp/migration_backup
```

## Restore data in remote databases

You can restore the SQL dumps to the remote databases from the foreman system.

```
PGPASSWORD='<FOREMAN_PASSWORD>' pg_restore -h postgres.example.com -U foreman -d foreman < /tmp/migration_backup/foreman.dump
PGPASSWORD='<CANDLEPIN_PASSWORD>' pg_restore -h postgres.example.com -U candlepin -d candlepin < /tmp/migration_backup/candlepin.dump
mongorestore --host mongo.example.com --db pulp_database --username pulp --password <PULP_PASSWORD> /tmp/migration_backup/mongo_dump
```

Now the copy of the local database is also at the remote locations.

## Update the configuration

To update existing configuration of Foreman we just need to run

```
foreman-installer --scenario katello \
--foreman-db-host postgres.example.com \
--foreman-db-password <FOREMAN_PASSWORD> \
--foreman-db-database foreman \
--foreman-db-manage false \
--katello-candlepin-db-host postgres.example.com \
--katello-candlepin-db-name candlepin \
--katello-candlepin-db-password <CANDLEPN_PASSWORD> \
--katello-candlepin-manage-db false \
--katello-pulp-db-username pulp \
--katello-pulp-db-password <PULP_PASSWORD> \
--katello-pulp-db-seeds "mongo.example.com:27017" \
--katello-pulp-db-name pulp_database \
--katello-pulp-manage-db false
```

The installer starts services aside from the database related services. Everything should be up and ready at this point, and you can clean up the local databases if you would like.

## Full list of remote database related options in the installer

Use `foreman-installer --full-help` for all up-to-date installer options

Foreman database related:

|                        |                                                                           |
|------------------------|---------------------------------------------------------------------------|
| --foreman-db-manage    | if enabled, will install and configure the database server on this host   |
| --foreman-db-database  | Database 'production' database (e.g. foreman)                             |
| --foreman-db-host      | Database 'production' host                                                |
| --foreman-db-password  | Database 'production' password, default is randomly generated             |
| --foreman-db-pool      | Database 'production' size of connection pool (current: 5)                |
| --foreman-db-port      | Database 'production' port                                                |
| --foreman-db-root-cert | Root cert used to verify SSL connection to postgres                       |
| --foreman-db-sslmode   | Database 'production' ssl mode (disable allow prefer require verify-full) |
| --foreman-db-username  | Database 'production' user (e.g. foreman)                                 |

Candlepin database related:

|                                   |                                                                                                        |
|-----------------------------------|--------------------------------------------------------------------------------------------------------|
| --katello-candlepin-db-host       | Host with Candlepin DB                                                                                 |
| --katello-candlepin-db-name       | Name of the Candlepin DB                                                                               |
| --katello-candlepin-db-password   | Candlepin DB password                                                                                  |
| --katello-candlepin-db-port       | Port accepting connections to Candlepin DB                                                             |
| --katello-candlepin-db-ssl        | Boolean indicating if the connection to the database should be over SSL                                |
| --katello-candlepin-db-ssl-verify | Boolean indicating if the SSL connection to the database should be verified                            |
| --katello-candlepin-db-user       | Candlepin DB user                                                                                      |
| --katello-candlepin-manage-db     | Boolean indicating whether a database should be installed, this includes db creation and user creation |

Mongo database related:

|                                    |                                                                                          |
|------------------------------------|------------------------------------------------------------------------------------------|
| --katello-pulp-db-ca-path          | The ca_certs file contains a set of concatenated "certification authority" certificates, |
| --katello-pulp-db-name             | Name of the database to use                                                              |
| --katello-pulp-db-password         | The password to use for authenticating to the MongoDB server                             |
| --katello-pulp-db-replica-set      | The name of replica set configured in MongoDB, if one is in use                          |
| --katello-pulp-db-seeds            | Comma-separated list of hostname:port of database replica seed hosts                     |
| --katello-pulp-db-ssl              | Whether to connect to the database server using SSL.                                     |
| --katello-pulp-db-ssl-certfile     | The certificate file used to identify the local connection against mongod.)              |
| --katello-pulp-db-ssl-keyfile      | A path to the private keyfile used to identify the local connection against mongod.      |
| --katello-pulp-db-unsafe-autoretry | If true, retry commands to the database if there is a connection error.                  |
| --katello-pulp-db-username         | The user name to use for authenticating to the MongoDB server                            |
| --katello-pulp-db-verify-ssl       | Specifies whether a certificate is required from the other side of the connection, and   |
| --katello-pulp-db-write-concern    | Write concern of 'majority' or 'all'. When 'all' is specified, 'w' is set to number of   |

The actual option names may vary between versions. Check the actual naming with `foreman-installer --full-help`.

## SSL configuration

Here is sample installer command that sets up Postgres databases with SSL verification. The Postgres server has its own CA. The CA cert used by Candlepin needs to be stored in system trust ( `/etc/pki/java/cacerts` ) as there is no other way to pass it to Candlepin

```
foreman-installer -S katello \
--foreman-admin-password changeme \
--foreman-db-host postgres.example.com \
--foreman-db-password foreman \
--foreman-db-database foreman_2 \
--foreman-db-root-cert /etc/pki/ca-trust/source/anchors/ca-chain.cert.pem \
--foreman-db-sslmode verify-full \
--katello-candlepin-db-host postgres.example.com \
--katello-candlepin-db-name candlepin_2 \
--katello-candlepin-db-password candlepin \
--katello-candlepin-db-ssl true \
--katello-candlepin-manage-db false
```

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## Katello Troubleshooting

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

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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:

| Component      | Status | Message                                        |
|----------------|--------|------------------------------------------------|
| candlepin      | FAIL   | Connection refused - connect(2)                |
| candlepin_auth | FAIL   | A backend service [ Candlepin ] is unreachable |
| elasticsearch  | OK     |                                                |
| foreman_tasks  | OK     |                                                |
| pulp           | OK     |                                                |
| pulp_auth      | OK     |                                                |

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 a web browser window with the URL `https://katello.example.com/foreman_tasks/tasks?utf8=%E2%9C%93&search=result+%3D+error`. The page title is "Tasks". A search bar at the top contains the query "result = error". Below the search bar is a table with columns: Action, State, Result, Started at, and User. The table lists several tasks, all of which have a "stopped" state and an "error" result. The tasks include publishing a content view, synchronizing a repository, creating and destroying organizations, and a cron job.

| 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 |
| Cron job                                                                             | stopped | error  | 2014-09-02 19:22:00 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 a web browser window with the URL `https://katello.example.com/foreman_tasks/tasks?utf8=%E2%9C%93&search=state+%3D+paused`. The page title is "Tasks". A search bar at the top contains the query "state = paused". Below the search bar is a table with columns: Action, State, Result, Started at, and User. The table lists one task, which has a "paused" state and an "error" result. The task is publishing a content view.

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

Displaying 1 entry

## Dealing with paused task

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

The screenshot shows the Foreman web interface with a task details modal open. The task is in a 'paused' state. The action is 'Actions::Pulp::Repository::CopyDistribution' and the input is a JSON object with fields like source\_pulp\_id, target\_pulp\_id, clauses, remote\_user, remote\_cp\_user, and locale.

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):

The screenshot shows the Dynflow console with a task history. Step 20, 'Actions::Pulp::Repository::CopyDistribution', failed with an error. The console includes tabs for Plan, Run, and Finalize, and shows sequence and concurrence nodes.

**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:

The screenshot shows a Foreman interface with a 'Dynflow Console' tab open. A modal dialog is displayed, showing a task configuration. The 'Action' field contains:

```
Actions::Pulp::Repository::CopyDistribution
```

The 'Input' field contains:

```
{"source_pulp_id"=>"Default_Organization-Foreman-nightly_el6_x86_64",
 "target_pulp_id"=>"Default_Organization-My_view-1-Foreman-nightly_el6_x86_64",
 "clauses"=>nil,
 "remote_user"=>"admin-283e0a66",
 "remote_cp_user"=>"admin",
 "locale"=>"en"}
```

The 'Output' field contains:

```
{"pulp_tasks"=>
 [{"exception"=>nil,
 "task_type"=>
 "pulp.server.managers.repo.unit_association.associate_from_repo",
 "_href"=>/pulp/api/v2/tasks/f25da4ae-b974-43e1-b232-9671209a70fd/,
 "task_id"=>"f25da4ae-b974-43e1-b232-9671209a70fd",
 "tags"=>
 ["pulp:repository:Default_Organization-My_view-1-Foreman-nightly_el6_x86_64",
 "pulp:repository:Default_Organization-Foreman-nightly_el6_x86_64",
 "pulp:action:associate"],
 "finish_time"=>nil,
 "start_time"=>nil,
```

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:

The screenshot shows a Foreman interface with a 'Dynflow Console' tab open. The timeline displays several tasks:

- 5: Actions::Candlepin::Environment::Create (success) [ 0.20s / 0.20s ]
- 9: Actions::Pulp::Repository::CreateInPlan (success) [ 0.03s / 0.03s ]
- 12: Actions::Pulp::Repository::CopyRpm (success) [ 2.15s / 1.14s ]
- 14: Actions::Pulp::Repository::CopyErrata (success) [ 0.69s / 0.69s ]
- 16: Actions::Pulp::Repository::CopyPackageGroup (success) [ 1.26s / 0.76s ]
- 18: Actions::Pulp::Repository::CopyYumMetadataFile (success) [ 71.72s / 3.56s ]
- 20: Actions::Pulp::Repository::CopyDistribution (suspended) [ 11976.09s / 6.20s ] Cancel

The task at index 20 is highlighted with a red border, indicating it is currently suspended.

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 follow [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.`:

The screenshot shows the Foreman interface with the title bar "Publish Content View" and "Tasks" open. The URL in the address bar is [https://katello.example.com/content\\_views/3/publish](https://katello.example.com/content_views/3/publish). The main content area is titled "Content Views". A search bar shows "Showing 1 of 1 (1 Total)". A table lists a single item: "My view" under the "Name" column. Below the table, a red callout box contains the error message: "Required lock is already taken by other running tasks. Please inspect their state, fix their errors and resume them. × Required lock: read Conflicts with tasks: - https://katello.example.com/foreman\_tasks/tasks/8cb306e7-91a9-49cc-8172-77fbd152e0c5". At the bottom, there's a section titled "Publish New Version" with a note about promoting the view to the Library environment.

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    | <input type="checkbox"/>           |
|--------------|------------------------------------|
| Select users | <a href="#">All items</a> 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/repoxml.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/repoxml.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: rGox3G9QhfCRD8fTsNR7FxqdgbvfJfSJ
```

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

```
pulp-admin -u admin -p rGox3G9QhfCRD8fTsNR7FxqdgbvfJfSJ 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=http://fedorapeople.org/groups/katello/releases/yum/1.0/RHEL/6Server/x86_64/
grinder.RepoFetch: INFO fetchYumRepo() repo_label = sync-test, repo_url =
http://fedorapeople.org/groups/katello/releases/yum/1.0/RHEL/6Server/x86_64/, basepath = ./, verify_options = {}
grinder.RepoFetch: INFO sync-test, http://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>,
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
repodata
rubygem-actionmailer-3.0.10-3.el6.noarch.rpm
...
```

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Foreman v2

Foreman API v2 is currently the default API version.

## Resources

### Activation keys

| Resource                                                                        | Description                                                 |
|---------------------------------------------------------------------------------|-------------------------------------------------------------|
| <a href="#">GET /katello/api/activation_keys</a>                                | List activation keys                                        |
| <a href="#">GET /katello/api/environments/:environment_id/activation_keys</a>   |                                                             |
| <a href="#">GET /katello/api/organizations/:organization_id/activation_keys</a> |                                                             |
| <a href="#">POST /katello/api/activation_keys</a>                               | Create an activation key                                    |
| <a href="#">PUT /katello/api/activation_keys/:id</a>                            | Update an activation key                                    |
| <a href="#">DELETE /katello/api/activation_keys/:id</a>                         | Destroy an activation key                                   |
| <a href="#">GET /katello/api/activation_keys/:id</a>                            | Show an activation key                                      |
| <a href="#">POST /katello/api/activation_keys/:id/copy</a>                      | Copy an activation key                                      |
| <a href="#">GET /katello/api/activation_keys/:id/host_collections/available</a> | List host collections the activation key does not belong to |
| <a href="#">GET /katello/api/activation_keys/:id/releases</a>                   | Show release versions available for an activation key       |
| <a href="#">GET /katello/api/activation_keys/:id/product_content</a>            | Show content available for an activation key                |
| <a href="#">POST /katello/api/activation_keys/:id/host_collections</a>          |                                                             |
| <a href="#">PUT /katello/api/activation_keys/:id/host_collections</a>           |                                                             |
| <a href="#">PUT /katello/api/activation_keys/:id/add_subscriptions</a>          | Attach a subscription                                       |
| <a href="#">PUT /katello/api/activation_keys/:id/remove_subscriptions</a>       | Unattach a subscription                                     |
| <a href="#">PUT /katello/api/activation_keys/:id/content_override</a>           | Override content for activation_key                         |

### Architectures

| Resource                               | Description            |
|----------------------------------------|------------------------|
| <a href="#">GET /api/architectures</a> | List all architectures |

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# Katello 3.9 Documentation

3.18 ▾

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## Repository Sync (default settings)

## Request # 1:

POST /pulp/api/v2/repositories/scenario\_test/actions-sync/

Backend Service: pulp

Description:

Request body

```
{
 "override_config": {
 "num_threads": 4,
 "validate": true
 }
}
```

Response body

```
{
 "spawned_tasks": [
 {
 "_href": "/pulp/api/v2/tasks/8b9c7591-4d1b-48b7-b37b-bce4fdc9c2fd/",
 "task_id": "8b9c7591-4d1b-48b7-b37b-bce4fdc9c2fd"
 },
 {"result": null,
 "error": null
 }
}
```

## Request # 2: Poll Sync task

GET /pulp/api/v2/tasks/8b9c7591-4d1b-48b7-b37b-bce4fdc9c2fd/

Backend Service: pulp

Description:

Total Requests for this URL: 32

Request body

None

Response body

```
{
 "exception": null,
 "task_type": "pulp.server.managers.repo.sync.sync",
 "_href": "/pulp/api/v2/tasks/8b9c7591-4d1b-48b7-b37b-bce4fdc9c2fd/",
 "task_id": "8b9c7591-4d1b-48b7-b37b-bce4fdc9c2fd",
 "tags": [
 "pulp:repository:scenario_test",
 "pulp:action:sync"
],
 "finish_time": "2017-03-30T21:16:05Z",
 "_ns": "task_status",
 "start_time": "2017-03-30T21:16:05Z",
 "traceback": null,
 "spawned_tasks": [
 {
 "_href": "/pulp/api/v2/tasks/0837f608-4696-449a-811f-70ddabe59025/",
 "task_id": "0837f608-4696-449a-811f-70ddabe59025"
 }
],
 "progress_report": {
 "yum_importer": {
 "content": {
 "items_total": 0,
 "state": "FINISHED",
 "error_details": [
 {"details": {
 "rpm_total": 0,
 "rpm_done": 0,
 "drpm_total": 0,
 "drpm_done": 0
 },
 "size_total": 0,
 "size_left": 0,
 "items_left": 0
 }
 },
 "compos": {}
 }
 }
}
```

```
 "comps": {
 "state": "FINISHED"
 },
 "purge_duplicates": {
 "state": "FINISHED"
 },
 "distribution": {
 "items_total": 3,
 "state": "FINISHED",
 "error_details": [
 {
 "items_left": 0
 }
],
 "errata": {
 "state": "FINISHED"
 },
 "metadata": {
 "state": "FINISHED"
 }
 }
 },
 "queue": "reserved_resource_worker-1@dev.example.com.dq",
 "state": "finished",
 "worker_name": "reserved_resource_worker-1@dev.example.com",
 "result": {
 "result": "success",
 "importer_id": "yum_importer",
 "exception": null,
 "repo_id": "scenario_test",
 "traceback": null,
 "started": "2017-03-30T21:16:05Z",
 "_ns": "repo_sync_results",
 "completed": "2017-03-30T21:16:05Z",
 "importer_type_id": "yum_importer",
 "error_message": null,
 "summary": {
 "content": {
 "state": "FINISHED"
 },
 "comps": {
 "state": "FINISHED"
 },
 "purge_duplicates": {
 "state": "FINISHED"
 },
 "distribution": {
 "state": "FINISHED"
 },
 "errata": {
 "state": "FINISHED"
 },
 "metadata": {
 "state": "FINISHED"
 }
 },
 "added_count": 15,
 "removed_count": 0,
 "updated_count": 0,
 "id": "58dd7595418a8a0648b9bc52",
 "details": {
 "content": {
 "size_total": 0,
 "items_left": 0,
 "items_total": 0,
 "state": "FINISHED",
 "size_left": 0,
 "details": {
 "rpm_total": 0,
 "rpm_done": 0,
 "drpm_total": 0,
 "drpm_done": 0
 }
 },
 "error_details": [
 {
 "items_left": 0
 }
],
 "comps": {
 "state": "FINISHED"
 },
 "purge_duplicates": {
 "state": "FINISHED"
 },
 "distribution": {
 "items_total": 3,
 "state": "FINISHED",
 "error_details": [
 {
 "items_left": 0
 }
],
 "errata": {
 "state": "FINISHED"
 }
 }
 }
 }
 }
 }
}
```

```
 "metadata": {
 "state": "FINISHED"
 }
 },
 "error": null,
 "_id": {
 "$oid": "58dd7594e6919db96421ea13"
 },
 "id": "58dd7594e6919db96421ea13"
}
```

## Request # 3: Poll Publish task

GET /pulp/api/v2/tasks/0837f608-4696-449a-811f-70ddabe59025/

Backend Service: pulp

Description:

Total Requests for this URL: 12

Request body

None

Response body

```
{
 "exception": null,
 "task_type": "pulp.server.managers.repo.publish.publish",
 "_href": "/pulp/api/v2/tasks/0837f608-4696-449a-811f-70ddabe59025/",
 "task_id": "0837f608-4696-449a-811f-70ddabe59025",
 "tags": [
 "pulp:repository:scenario_test",
 "pulp:action:publish"
],
 "finish_time": "2017-03-30T21:16:05Z",
 "_ns": "task_status",
 "start_time": "2017-03-30T21:16:05Z",
 "traceback": null,
 "spawned_tasks": [
],
 "progress_report": {
 "scenario_test": [
 {
 "num_success": 1,
 "description": "Copying files",
 "step_type": "save_tar",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "8fa5d08e-3.83-4127-80f6-223bee0a0409",
 "num_processed": 1
 },
 {
 "num_success": 1,
 "description": "Initializing repo metadata",
 "step_type": "initialize_repo_metadata",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "32cee4d1-6e51-419a-9833-5f2c88e3efd9",
 "num_processed": 1
 },
 {
 "num_success": 1,
 "description": "Publishing Distribution files",
 "step_type": "distribution",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "d62a1815-acd5-439c-b511-dcbd69edad4",
 "num_processed": 1
 },
 {
 "num_success": 8
 }
]
 }
}
```

```
"num_success": 8,
"description": "Publishing RPMs",
"step_type": "rpms",
"items_total": 8,
"state": "FINISHED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "197b0894-07fd-470b-8bb4-5a55b9713d18",
"num_processed": 8
},
{
"num_success": 0,
"description": "Publishing Delta RPMs",
"step_type": "drpms",
"items_total": 1,
"state": "SKIPPED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "54795382-de70-4de3-a8ce-5f726b8f9cb2",
"num_processed": 0
},
{
"num_success": 3,
"description": "Publishing Errata",
"step_type": "errata",
"items_total": 3,
"state": "FINISHED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "1996449c-9471-4988-b3ee-b7ceae0c6b41",
"num_processed": 3
},
{
"num_success": 3,
"description": "Publishing Comps file",
"step_type": "comps",
"items_total": 3,
"state": "FINISHED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "f12472f5-4012-4112-afe0-49f57348e569",
"num_processed": 3
},
{
"num_success": 0,
"description": "Publishing Metadata",
"step_type": "metadata",
"items_total": 0,
"state": "FINISHED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "31efb1ef-a413-48be-99f2-7f4788a1cebd",
"num_processed": 0
},
{
"num_success": 1,
"description": "Closing repo metadata",
"step_type": "close_repo_metadata",
"items_total": 1,
"state": "FINISHED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "22b9313d-ffae-49e3-8027-c86ef68f34de",
"num_processed": 1
},
{
"num_success": 0,
"description": "Generating sqlite files",
"step_type": "generate_sqlite",
"items_total": 1,
"state": "SKIPPED",
"error_details": [
],
"details": "",
"num_failures": 0,
```

```
"step_id": "fbc75485-e400-4cfa-bfa7-693edd8a832c",
"num_processed": 0
},
{
 "num_success": 0,
 "description": "Generating HTML files",
 "step_type": "repoview",
 "items_total": 1,
 "state": "SKIPPED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "bf1215fe-c617-4481-894a-1ff1c7c7043b",
 "num_processed": 0
},
{
 "num_success": 1,
 "description": "Publishing files to web",
 "step_type": "publish_directory",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "605ae2e4-c443-4a5b-ba9f-f313d23c4822",
 "num_processed": 1
},
{
 "num_success": 1,
 "description": "Writing Listings File",
 "step_type": "initialize_repo_metadata",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "9fa215e9-b465-4f33-9ddd-e05c5a9e314d",
 "num_processed": 1
}
],
},
"queue": "reserved_resource_worker-1@dev.example.com.dq",
"state": "finished",
"worker_name": "reserved_resource_worker-1@dev.example.com",
"result": {
 "result": "success",
 "exception": null,
 "repo_id": "scenario_test",
 "started": "2017-03-30T21:16:05Z",
 "_ns": "repo_publish_results",
 "completed": "2017-03-30T21:16:05Z",
 "traceback": null,
 "distributor_type_id": "yum_distributor",
 "summary": {
 "generate_sqlite": "SKIPPED",
 "initialize_repo_metadata": "FINISHED",
 "rpms": "FINISHED",
 "repoview": "SKIPPED",
 "close_repo_metadata": "FINISHED",
 "drpm": "SKIPPED",
 "comps": "FINISHED",
 "distribution": "FINISHED",
 "save_tar": "FINISHED",
 "publish_directory": "FINISHED",
 "errata": "FINISHED",
 "metadata": "FINISHED"
 },
 "error_message": null,
 "distributor_id": "scenario_test",
 "id": "58dd7595418a8a0648b9bc53",
 "details": [
 {
 "num_success": 1,
 "description": "Copying files",
 "step_type": "save_tar",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "8fa5d08e-3.83-4127-80f6-223bee0a0409",
 "num_processed": 1
 },
 {
 "num_success": 1,
 "description": "Initializing repo metadata"
 }
]
}
```

```
 "description": "Initializing Repo metadata",
 "step_type": "initialize_repo_metadata",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "32cee4d1-6e51-419a-9833-5f2c88e3efd9",
 "num_processed": 1
 },
 {
 "num_success": 1,
 "description": "Publishing Distribution files",
 "step_type": "distribution",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "d62a1815-acd5-439c-b511-dcbd69edade4",
 "num_processed": 1
 },
 {
 "num_success": 8,
 "description": "Publishing RPMs",
 "step_type": "rpms",
 "items_total": 8,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "197b0894-07fd-470b-8bb4-5a55b9713d18",
 "num_processed": 8
 },
 {
 "num_success": 0,
 "description": "Publishing Delta RPMs",
 "step_type": "drpms",
 "items_total": 1,
 "state": "SKIPPED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "54795382-de70-4de3-a8ce-5f726b8f9cb2",
 "num_processed": 0
 },
 {
 "num_success": 3,
 "description": "Publishing Errata",
 "step_type": "errata",
 "items_total": 3,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "1996449c-9471-4988-b3ee-b7ceae0c6b41",
 "num_processed": 3
 },
 {
 "num_success": 3,
 "description": "Publishing Comps file",
 "step_type": "comps",
 "items_total": 3,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "f12472f5-4012-4112-afe0-49f57348e569",
 "num_processed": 3
 },
 {
 "num_success": 0,
 "description": "Publishing Metadata.",
 "step_type": "metadata",
 "items_total": 0,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "31efb1ef-a413-48be-99f2-7f4788a1cebd",
 "num_processed": 0
 }
]
```

```

 "num_processed": 0
 },
 {
 "num_success": 1,
 "description": "Closing repo metadata",
 "step_type": "close_repo_metadata",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "22b9313d-ffae-49e3-8027-c86ef68f34de",
 "num_processed": 1
 },
 {
 "num_success": 0,
 "description": "Generating sqlite files",
 "step_type": "generate_sqlite",
 "items_total": 1,
 "state": "SKIPPED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "fbc75485-e400-4cfa-bfa7-693edd8a832c",
 "num_processed": 0
 },
 {
 "num_success": 0,
 "description": "Generating HTML files",
 "step_type": "repoview",
 "items_total": 1,
 "state": "SKIPPED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "bf1215fe-c617-4481-894a-1ff1c7c7043b",
 "num_processed": 0
 },
 {
 "num_success": 1,
 "description": "Publishing files to web",
 "step_type": "publish_directory",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "605ae2e4-c443-4a5b-ba9f-f313d23c4822",
 "num_processed": 1
 },
 {
 "num_success": 1,
 "description": "Writing Listings File",
 "step_type": "initialize_repo_metadata",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "9fa215e9-b465-4f33-9ddd-e05c5a9e314d",
 "num_processed": 1
 }
]
},
"error": null,
"_id": {
 "$oid": "58dd7595e6919db96421ea23"
},
"id": "58dd7595e6919db96421ea23"
}

```

## Request # 4: Distribution Search

POST /pulp/api/v2/repositories/scenario\_test/search/units/

Backend Service: pulp

Description: Search for distribution information with all fields

Request body

```
{
 "criteria": {
 "type_ids": [
 "distribution"
]
 }
}
```

Response body

```
[
 {
 "metadata": {
 "files": [
 {
 "relativepath": "images/test2.img",
 "checksumtype": "sha256",
 "checksum": "e3b0c44298fc1c149afbf4c8996fb92427ae41e4649b934ca495991b7852b855"
 },
 {
 "relativepath": "empty.iso",
 "checksumtype": "sha256",
 "checksum": "e3b0c44298fc1c149afbf4c8996fb92427ae41e4649b934ca495991b7852b855"
 },
 {
 "relativepath": "images/test1.img",
 "checksumtype": "sha256",
 "checksum": "e3b0c44298fc1c149afbf4c8996fb92427ae41e4649b934ca495991b7852b855"
 }
],
 "_storage_path": "/var/lib/pulp/content/units/distribution/9b/831256a124718bf39166b564d8e689954ff0a8f0f479ba24cfca26350109bc5",
 "family": "Test Family",
 "downloaded": true,
 "timestamp": 1323112153.09,
 "_last_updated": 1490908565,
 "_content_type_id": "distribution",
 "variant": "TestVariant",
 "id": "ks-Test Family-TestVariant-16-x86_64",
 "version": "16",
 "version_sort_index": "02-16",
 "pulp_user_metadata": {
 },
 "packagedir": "",
 "_id": "be1ea9b9-518c-4c05-ab97-3d6102482158",
 "arch": "x86_64",
 "_ns": "units_distribution"
 },
 "updated": "2017-03-30T21:16:05Z",
 "repo_id": "scenario_test",
 "created": "2017-03-30T21:16:05Z",
 "unit_type_id": "distribution",
 "unit_id": "be1ea9b9-518c-4c05-ab97-3d6102482158",
 "_id": {
 "$oid": "58dd7595e6919db96421ea1c"
 }
 }
]
```

## Request # 5: Fetch rpm unit ids for this repo

POST /pulp/api/v2/repositories/scenario\_test/search/units/

Backend Service: pulp

Description:

Request body

```
{
 "criteria": {
 "type_ids": [
 "rpm"
],
 "fields": {
 "unit": [
],
 "association": [
 {
 "unit_id"
 }
]
 }
 }
}
```

Response body

```
[
 {
 "metadata": {
 "_id": "085babbb-3a43-4b9c-bdfb-915fd78c7bec",
 "_content_type_id": "rpm"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea1a"
 },
 "unit_id": "085babbb-3a43-4b9c-bdfb-915fd78c7bec",
 "unit_type_id": "rpm"
 },
 {
 "metadata": {
 "_id": "2b00d383-f2c7-462c-bfe3-25a008caa0fe",
 "_content_type_id": "rpm"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea18"
 },
 "unit_id": "2b00d383-f2c7-462c-bfe3-25a008caa0fe",
 "unit_type_id": "rpm"
 },
 {
 "metadata": {
 "_id": "5ee1ec3a-7f81-47e6-bbba-11b443251f29",
 "_content_type_id": "rpm"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea15"
 },
 "unit_id": "5ee1ec3a-7f81-47e6-bbba-11b443251f29",
 "unit_type_id": "rpm"
 },
 {
 "metadata": {
 "_id": "6b8e6197-c155-4c8c-a931-aa5b85bd218c",
 "_content_type_id": "rpm"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea17"
 },
 "unit_id": "6b8e6197-c155-4c8c-a931-aa5b85bd218c",
 "unit_type_id": "rpm"
 },
 {
 "metadata": {
 "_id": "7ff4f862-7ae7-4b20-b072-0d154a9cc527",
 "_content_type_id": "rpm"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea16"
 },
 "unit_id": "7ff4f862-7ae7-4b20-b072-0d154a9cc527",
 "unit_type_id": "rpm"
 },
 {
 "metadata": {
 "_id": "9f6b8fda-dd97-453e-8841-093d05c8eac3",
 "_content_type_id": "rpm"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea19"
 },
 "unit_id": "9f6b8fda-dd97-453e-8841-093d05c8eac3",
 "unit_type_id": "rpm"
 },
 {
 "metadata": {
 "_id": "d35640a0-8613-44bd-9e99-141af2843087",
 "_content_type_id": "rpm"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea14"
 },
 "unit_id": "d35640a0-8613-44bd-9e99-141af2843087",
 "unit_type_id": "rpm"
 },
 {
 "metadata": {
 "_id": "f521f967-a646-436e-ba83-1ac9ef8f7cd8",
 "_content_type_id": "rpm"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea1b"
 },
 "unit_id": "f521f967-a646-436e-ba83-1ac9ef8f7cd8",
 "unit_type_id": "rpm"
 }]
```

## Request # 6: Fetch rpm units for this repository

POST /pulp/api/v2/content/units/rpm/search/

Backend Service: pulp

Description: Search for all rpms with the previously fetched ids. We do this because historically we've wanted the list of all repo ids for each unit, which is only available via this endpoint.

Request body

```
{
 "criteria": {
 "limit": 8,
 "skip": 0,
 "fields": [
 "name",
 "version",
 "release",
 "arch",
 "epoch",
 "summary",
 "sourcerpm",
 "checksum",
 "filename",
 "_id"
],
 "filters": {
 "_id": {
 "$in": [
 "085babbb-3a43-4b9c-bdfb-915fd78c7bec",
 "2b00d383-f2c7-462c-bfe3-25a008caa0fe",
 "5ee1ec3a-7f81-47e6-bbba-11b443251f29",
 "6b8e6197-c155-4c8c-a931-aa5b85bd218c",
 "7ff4f862-7ae7-4b20-b072-0d154a9cc527",
 "9f6b8fda-dd97-453e-8841-093d05c8eac3",
 "d35640a0-8613-44bd-9e99-141af2843087",
 "f521f967-a646-436e-ba83-1ac9ef8f7cd8"
]
 }
 },
 "include_repos": true
 }
}
```

Response body

```
[
 {
 "repository_memberships": [
 "scenario_test"
],
 "sourcerpm": "walrus-0.3-0.8.src.rpm",
 "name": "walrus",
 "checksum": "6e8d6dc057e3e2c9819f0dc7e6c7b7f86bf2e8571bba414adec7fb621a461dfd",
 "summary": "A dummy package of walrus",
 "filename": "walrus-0.3-0.8.noarch.rpm",
 "epoch": "0",
 "version": "0.3",
 "release": "0.8",
 "_id": "085babbb-3a43-4b9c-bdfb-915fd78c7bec",
 "arch": "noarch",
 "children": {},
 "_href": "/pulp/api/v2/content/units/rpm/085babbb-3a43-4b9c-bdfb-915fd78c7bec/"
 },
 {
 "repository_memberships": [
 "scenario_test"
],
 "sourcerpm": "penguin-0.3-0.8.src.rpm",
 "name": "penguin",
 "checksum": "3fc2c927de9e13bf68469032a28b139d3e5ad2e58564fc210fd6e48635be694",
 "summary": "A dummy package of penguin",
 "filename": "penguin-0.3-0.8.noarch.rpm",
 "epoch": "0",
 "version": "0.3",
 "release": "0.8",
 "_id": "2b00d383-f2c7-462c-bfe3-25a008caa0fe",
 "arch": "noarch",
 "children": {},
 "_href": "/pulp/api/v2/content/units/rpm/2b00d383-f2c7-462c-bfe3-25a008caa0fe/"
 },
 {
 "repository_memberships": [
 "scenario_test"
],
 "sourcerpm": "walrus-0.3-0.8.src.rpm",
 "name": "walrus",
 "checksum": "6e8d6dc057e3e2c9819f0dc7e6c7b7f86bf2e8571bba414adec7fb621a461dfd",
 "summary": "A dummy package of walrus",
 "filename": "walrus-0.3-0.8.noarch.rpm",
 "epoch": "0",
 "version": "0.3",
 "release": "0.8",
 "_id": "085babbb-3a43-4b9c-bdfb-915fd78c7bec",
 "arch": "noarch",
 "children": {},
 "_href": "/pulp/api/v2/content/units/rpm/085babbb-3a43-4b9c-bdfb-915fd78c7bec/"
 }]
```

```
"sourcerpm": "elephant-0.3-0.8.src.rpm",
"name": "elephant",
"checksum": "3e1c70cd1b421328acaf63.8cb3d16145306bb95f65d1b095fc31372a0a701f3",
"summary": "A dummy package of elephant",
"filename": "elephant-0.3-0.8.noarch.rpm",
"epoch": "0",
"version": "0.3",
"release": "0.8",
"_id": "5ee1ec3a-7f81-47e6-bbba-11b443251f29",
"arch": "noarch",
"children": {
},
"_href": "/pulp/api/v2/content/units/rpm/5ee1ec3a-7f81-47e6-bbba-11b443251f29/"
},
{
"repository_memberships": [
"scenario_test"
],
"sourcerpm": "monkey-0.3-0.8.src.rpm",
"name": "monkey",
"checksum": "0e8fa50d0128fbabc7ccc5632e3fa25d39b0280169f6166cb8e2c84de8501db1",
"summary": "A dummy package of monkey",
"filename": "monkey-0.3-0.8.noarch.rpm",
"epoch": "0",
"version": "0.3",
"release": "0.8",
"_id": "6b8e6197-c155-4c8c-a931-aa5b85bd218c",
"arch": "noarch",
"children": {
},
"_href": "/pulp/api/v2/content/units/rpm/6b8e6197-c155-4c8c-a931-aa5b85bd218c/"
},
{
"repository_memberships": [
"scenario_test"
],
"sourcerpm": "lion-0.3-0.8.src.rpm",
"name": "lion",
"checksum": "12400dc95c23a4c160725a908716cd3fcdd7a8981585437ab64cd62efa3e4ae4",
"summary": "A dummy package of lion",
"filename": "lion-0.3-0.8.noarch.rpm",
"epoch": "0",
"version": "0.3",
"release": "0.8",
"_id": "7ff4f862-7ae7-4b20-b072-0d154a9cc527",
"arch": "noarch",
"children": {
},
"_href": "/pulp/api/v2/content/units/rpm/7ff4f862-7ae7-4b20-b072-0d154a9cc527/"
},
{
"repository_memberships": [
"scenario_test"
],
"sourcerpm": "cheetah-0.3-0.8.src.rpm",
"name": "cheetah",
"checksum": "422d0baa0cd9d7713ae796e886a23e17f578f924f74880debdbb7d65fb368dae",
"summary": "A dummy package of cheetah",
"filename": "cheetah-0.3-0.8.noarch.rpm",
"epoch": "0",
"version": "0.3",
"release": "0.8",
"_id": "9f6b8fda-dd97-453e-8841-093d05c8eac3",
"arch": "noarch",
"children": {
},
"_href": "/pulp/api/v2/content/units/rpm/9f6b8fda-dd97-453e-8841-093d05c8eac3/"
},
{
"repository_memberships": [
"scenario_test"
],
"sourcerpm": "giraffe-0.3-0.8.src.rpm",
"name": "giraffe",
"checksum": "f25d67d1d9da04f12e57ca323247b43891ac46533e355b82de6d1922009f9f14",
"summary": "A dummy package of giraffe",
"filename": "giraffe-0.3-0.8.noarch.rpm",
"epoch": "0",
"version": "0.3",
"release": "0.8",
"_id": "d35640a0-8613-44bd-9e99-141af2843087",
"arch": "noarch",
"children": {
},
"_href": "/pulp/api/v2/content/units/rpm/d35640a0-8613-44bd-9e99-141af2843087/"
},
{
"repository_memberships": [
"scenario_test"
],
"sourcerpm": "squirrel-0.3-0.8.src.rpm",
"name": "squirrel",
"checksum": "251768bdd15f13.88487c27638aa6aec01551e253756093cde1c0ae878a17d2",
"summary": "A dummy package of squirrel"
}
```

```
Summary : A dummy package of squirrel ,
"filename": "squirrel-0.3-0.8.noarch.rpm",
"epoch": "0",
"version": "0.3",
"release": "0.8",
"_id": "f521f967-a646-436e-ba83-1ac9ef8f7cd8",
"arch": "noarch",
"children": {}
},
"_href": "/pulp/api/v2/content/units/rpm/f521f967-a646-436e-ba83-1ac9ef8f7cd8/"
]
]
```

## Request # 7: Fetch Errata ids for repository

POST /pulp/api/v2/repositories/scenario\_test/search/units/

Backend Service: pulp

Description:

Request body

```
{
 "criteria": {
 "type_ids": [
 "erratum"
],
 "fields": {
 "unit": [
 "
],
 "association": [
 {"
 "unit_id"
]
]
 }
 }
}
```

Response body

```
[
 {
 "metadata": {
 "_id": "4b12197f-28b0-4d5c-bf8d-057dc0b378f1",
 "_content_type_id": "erratum"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea1e"
 },
 "unit_id": "4b12197f-28b0-4d5c-bf8d-057dc0b378f1",
 "unit_type_id": "erratum"
 },
 {
 "metadata": {
 "_id": "5bc4a860-2872-461a-8061-b30626274615",
 "_content_type_id": "erratum"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea1f"
 },
 "unit_id": "5bc4a860-2872-461a-8061-b30626274615",
 "unit_type_id": "erratum"
 },
 {
 "metadata": {
 "_id": "c12277ae-b619-40cc-afbc-75c92e78ca13",
 "_content_type_id": "erratum"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea1d"
 },
 "unit_id": "c12277ae-b619-40cc-afbc-75c92e78ca13",
 "unit_type_id": "erratum"
 }
]
```

## Request # 8: Fetch errata units.

POST /pulp/api/v2/content/units/erratum/search/

Backend Service: pulp

Description: Using the previously fetched ids, we fetch all errata in the repo.

## Request body

```
{
 "criteria": {
 "limit": 3,
 "skip": 0,
 "filters": {
 "id": {
 "$in": [
 "4b12197f-28b0-4d5c-bf8d-057dc0b378f1",
 "5bc4a860-2872-461a-8061-b30626274615"
]
 }
 }
 },
 "include_repos": true
}
```

## Response body

```
[
 {
 "repository_memberships": [
 "scenario_test"
],
 "_href": "/pulp/api/v2/content/units/erratum/4b12197f-28b0-4d5c-bf8d-057dc0b378f1/",
 "issued": "2010-11-10 00:00:00",
 "references": [
 {
 "href": "https://rhn.redhat.com/errata/RHSA-2010-0858.html",
 "type": "self",
 "id": null,
 "title": "RHSA-2010:0858"
 },
 {
 "href": "https://bugzilla.redhat.com/bugzilla/show_bug.cgi?id=627882",
 "type": "bugzilla",
 "id": "627882",
 "title": "CVE-2010-0405 bzip2: integer overflow flaw in BZ2_decompress"
 },
 {
 "href": "https://www.redhat.com/security/data/cve/CVE-2010-0405.html",
 "type": "cve",
 "id": "CVE-2010-0405",
 "title": "CVE-2010-0405"
 },
 {
 "href": "http://www.redhat.com/security/updates/classification/#important",
 "type": "other",
 "id": null,
 "title": null
 }
],
 "pulp_user_metadata": {
 "_content_type_id": "erratum",
 "id": "RHSA-2010:0858",
 "from": "security@redhat.com",
 "severity": "Important",
 "title": "Important: bzip2 security update",
 "children": {}
 },
 "version": "3",
 "reboot_suggested": false,
 "type": "security",
 "pkclist": [
 {
 "_pulp_repo_id": "scenario_test",
 "packages": [
 {
 "src": "bzip2-1.0.5-7.el6_0.src.rpm",
 "name": "bzip2-devel",
 "sum": [
 "sha256",
 "ea67c664da1ff96a6dc94d33009b73d8fab31b59824183fb45e9ba2ebf82d583"
],
 "filename": "bzip2-devel-1.0.5-7.el6_0.i686.rpm",
 "epoch": "0",
 "version": "1.0.5",
 "release": "7.el6_0",
 "arch": "i686"
 },
 {
 "src": "bzip2-1.0.5-7.el6_0.src.rpm",
 "name": "bzip2-libs",
 "sum": [
 "sha256",
 "c9f064a6862573fb9f2a6aff7c3621f1940b492df2edfc2ebbd0b8305f51147"
]
 }
]
 }
]
 }
]
```

```
{
 "filename": "bzip2-libs-1.0.5-7.el6_0.i686.rpm",
 "epoch": "0",
 "version": "1.0.5",
 "release": "7.el6_0",
 "arch": "i686"
},
{
 "src": "bzip2-1.0.5-7.el6_0.src.rpm",
 "name": "bzip2",
 "sum": [
 "sha256",
 "b8a3.82bc2b0d89ba737099ac98bf8d2af4bea02d31884c02db97f7f66c3d5c2"
],
 "filename": "bzip2-1.0.5-7.el6_0.x86_64.rpm",
 "epoch": "0",
 "version": "1.0.5",
 "release": "7.el6_0",
 "arch": "x86_64"
},
{
 "src": "bzip2-1.0.5-7.el6_0.src.rpm",
 "name": "bzip2-devel",
 "sum": [
 "sha256",
 "7f63124e4655b7c92d23ec4c38226f5d3746568853dff750fc85e058e74b5cf6"
],
 "filename": "bzip2-devel-1.0.5-7.el6_0.x86_64.rpm",
 "epoch": "0",
 "version": "1.0.5",
 "release": "7.el6_0",
 "arch": "x86_64"
},
{
 "src": "bzip2-1.0.5-7.el6_0.src.rpm",
 "name": "bzip2-libs",
 "sum": [
 "sha256",
 "802f4399dbdd01476e254c3b32c40aff59cf5d23a45fa488c6917ce8904d6b4d"
],
 "filename": "bzip2-libs-1.0.5-7.el6_0.x86_64.rpm",
 "epoch": "0",
 "version": "1.0.5",
 "release": "7.el6_0",
 "arch": "x86_64"
},
],
 "name": "Red Hat Enterprise Linux Server (v. 6 for 64-bit x86_64)",
 "short": "rhel-x86_64-server-6"
},
],
 "status": "final",
 "updated": "2010-11-10 00:00:00",
 "description": "bzip2 is a freely available, high-quality data compressor. It provides both libbz2 library must be restarted for the update to take effect.",
 "_last_updated": "2017-03-30T21:16:05Z",
 "pushcount": "",
 "rights": "Copyright 2010 Red Hat Inc",
 "solution": "Before applying this update, make sure all previously-released errata relevant to your system have been applied.\n\nThis update is available via the Red Hat Network. Details on how to use the Red Hat Network to apply this update are available at http://kbase.redhat.com/faq/docs/DOC-11259",
 "summary": "Updated bzip2 packages that fix one security issue",
 "release": "",
 "_id": "4b12197f-28b0-4d5c-bf8d-057dc0b378f1"
},
{
 "repository_memberships": [
 "scenario_test"
],
 "_href": "/pulp/api/v2/content/units/erratum/5bc4a860-2872-461a-8061-b30626274615/",
 "issued": "2010-01-01 01:01:01",
 "references": [
],
 "pulp_user_metadata": {
 },
 "_content_type_id": "erratum",
 "id": "RHEA-2010:0002",
 "from": "izap+pub@redhat.com",
 "severity": "",
 "title": "One package errata",
 "children": {
 },
 "version": "1",
 "reboot_suggested": false,
 "type": "security",
 "pkglist": [
 {
 "_pulp_repo_id": "scenario_test",
 "packages": [
 {
 "src": "http://www.fedoraproject.org",
 "name": "elephant",
 "sum": null
 }
]
 }
]
}
```

```

 "filename": "elephant-0.3-0.8.noarch.rpm",
 "epoch": null,
 "version": "0.3",
 "release": "0.8",
 "arch": "noarch"
 }
],
 "name": "1",
 "short": ""
}
],
"status": "stable",
"updated": "",
"description": "One package errata",
"_last_updated": "2017-03-30T21:16:05Z",
"pushcount": "",
"rights": "",
"solution": "",
"summary": "",
"release": "1",
"_id": "5bc4a860-2872-461a-8061-b30626274615"
},
{
 "repository_memberships": [
 "scenario_test"
],
 "_href": "/pulp/api/v2/content/units/erratum/c12277ae-b619-40cc-afbc-75c92e78ca13/",
 "issued": "2010-01-01 01:01:01",
 "references": [
],
 "pulp_user_metadata": {
 },
 "_content_type_id": "erratum",
 "id": "RHEA-2010:0001",
 "from": "lzap+pub@redhat.com",
 "severity": "",
 "title": "Empty errata",
 "children": {
 },
 "version": "1",
 "reboot_suggested": false,
 "type": "security",
 "pkglst": [
],
 "status": "stable",
 "updated": "",
 "description": "Empty errata",
 "_last_updated": "2017-03-30T21:16:05Z",
 "pushcount": "",
 "rights": "",
 "solution": "",
 "summary": "",
 "release": "1",
 "_id": "c12277ae-b619-40cc-afbc-75c92e78ca13"
}
]

```

## Request # 9: Fetch package group units for repository

POST /pulp/api/v2/repositories/scenario\_test/search/units/

Backend Service: pulp

Description:

Request body

```
{
 "criteria": {
 "type_ids": [
 "package_group"
],
 "fields": {
 "unit": [
 ...
],
 "association": [
 "unit_id"
]
 }
 }
}
```

Response body

```
[
 {
 "metadata": {
 "_id": "919baa7e-e944-4602-b3ed-3aef2ae5b509",
 "_content_type_id": "package_group"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea21"
 },
 "unit_id": "919baa7e-e944-4602-b3ed-3aef2ae5b509",
 "unit_type_id": "package_group"
 },
 {
 "metadata": {
 "_id": "c55b5b16-7501-4863-8e3f-f7520bc795fd",
 "_content_type_id": "package_group"
 },
 "_id": {
 "$oid": "58dd7595e6919db96421ea20"
 },
 "unit_id": "c55b5b16-7501-4863-8e3f-f7520bc795fd",
 "unit_type_id": "package_group"
 }
]
```

## Request # 10: Fetch package group ids for repository

POST /pulp/api/v2/content/units/package\_group/search/

Backend Service: pulp

Description: Using the previously fetched ids, we fetch all package groups in the repo.

Request body

```
{
 "criteria": {
 "limit": 2,
 "skip": 0,
 "filters": {
 "_id": {
 "$in": [
 "919baa7e-e944-4602-b3ed-3aef2ae5b509",
 "c55b5b16-7501-4863-8e3f-f7520bc795fd"
]
 }
 },
 "include_repos": true
 }
}
```

Response body

```
[
 {
 "repository_memberships": [
 "scenario_test"
],
 "mandatory_package_names": [
 "elephant,giraffe,cheetah,lion,monkey,penguin,squirrel,walrus",
 "penguin"
],
 "repo_id": "scenario_test",
 "name": "mammal",
 "user_visible": true,
 "default": true,
 "_last_updated": "2017-03-30T18:41:08Z",
 "children": {
 },
 "optional_package_names": [
],
 "translated_name": {
 },
 "_href": "/pulp/api/v2/content/units/package_group/919baa7e-e944-4602-b3ed-3aef2ae5b509/",
 "translated_description": {
 },
 "pulp_user_metadata": {
 },
 "default_package_names": [
],
 "_content_type_id": "package_group",
 "id": "mammal",
 "_id": "919baa7e-e944-4602-b3ed-3aef2ae5b509",
 "display_order": 1024,
 "conditional_package_names": [
]
 },
 {
 "repository_memberships": [
 "scenario_test"
],
 "mandatory_package_names": [
 "penguin"
],
 "repo_id": "scenario_test",
 "name": "bird",
 "user_visible": true,
 "default": true,
 "_last_updated": "2017-03-30T18:41:08Z",
 "children": {
 },
 "optional_package_names": [
],
 "translated_name": {
 },
 "_href": "/pulp/api/v2/content/units/package_group/c55b5b16-7501-4863-8e3f-f7520bc795fd/",
 "translated_description": {
 },
 "pulp_user_metadata": {
 },
 "default_package_names": [
],
 "_content_type_id": "package_group",
 "id": "bird",
 "_id": "c55b5b16-7501-4863-8e3f-f7520bc795fd",
 "display_order": 1024,
 "conditional_package_names": [
]
 }
]
```

## Request # 11: Request applicability generation for consumers bound to the repository

POST /pulp/api/v2/repositories/actions/content/regenerate\_applicability//

Backend Service: pulp

Description:

Request body

```
{
 "parallel": true,
 "repo_criteria": {
 "filters": {
 "id": {
 "$in": [
 "scenario_test"
]
 }
 }
 }
}
```

Response body

```
{
 "group_id": "b0e268a7-f4bf-4598-90a3-5fc3b562cc95",
 "_href": "/pulp/api/v2/task_groups/b0e268a7-f4bf-4598-90a3-5fc3b562cc95/"
}
```

## Request # 12: Monitor task group status

GET /pulp/api/v2/task\_groups/b0e268a7-f4bf-4598-90a3-5fc3b562cc95/state\_summary/

Backend Service: pulp

Description: Monitor status of the applicability generation

Request body

None

Response body

```
{
 "accepted": 0,
 "finished": 0,
 "running": 0,
 "canceled": 0,
 "waiting": 0,
 "skipped": 0,
 "suspended": 0,
 "error": 0,
 "total": 0
}
```

## Request # 13: Fetch repository details

GET /pulp/api/v2/repositories/scenario\_test/

Backend Service: pulp

Description: Unclear why

Request body

None

Response body

```
{
 "scratchpad": {
 "checksum_type": "sha256"
 },
 "display_name": "Scenario yum product",
 "description": null,
 "distributors": [
 {
 "repo_id": "scenario_test",
 "last_updated": "2017-03-30T21:15:43Z",
 "_href": "/pulp/api/v2/repositories/scenario_test/distributors/scenario_test_clone/"
 },
 "last_override_config": {
 },
 "last_publish": null,
 "distributor_type_id": "yum_clone_distributor",
 "auto_publish": false,
 "scratchpad": {
 },
 "_ns": "repo_distributors",
 "_id": {
 "$oid": "58dd757f418a8a04f88de7da"
 }
]
}
```

```
},
 "config": {
 "destination_distributor_id": "scenario_test"
 },
 "id": "scenario_test_clone"
},
{
 "repo_id": "scenario_test",
 "last_updated": "2017-03-30T21:16:05Z",
 "_href": "/pulp/api/v2/repositories/scenario_test/distributors/scenario_test/",
 "last_override_config": {
 },
 "last_publish": "2017-03-30T21:16:05Z",
 "distributor_type_id": "yum_distributor",
 "auto_publish": true,
 "scratchpad": {
 },
 "_ns": "repo_distributors",
 "_id": {
 "$oid": "58dd757f418a8a04f88de7d8"
 },
 "config": {
 "checksum_type": "sha256",
 "protected": true,
 "http": false,
 "https": true,
 "relative_url": "scenario_test"
 },
 "id": "scenario_test"
},
{
 "repo_id": "scenario_test",
 "last_updated": "2017-03-30T21:15:43Z",
 "_href": "/pulp/api/v2/repositories/scenario_test/distributors/export_distributor/",
 "last_override_config": {
 },
 "last_publish": null,
 "distributor_type_id": "export_distributor",
 "auto_publish": false,
 "scratchpad": {
 },
 "_ns": "repo_distributors",
 "_id": {
 "$oid": "58dd757f418a8a04f88de7d9"
 },
 "config": {
 "http": false,
 "relative_url": "scenario_test",
 "https": false
 },
 "id": "export_distributor"
}
],
"last_unit_added": "2017-03-30T21:16:05Z",
"notes": {
 "_repo-type": "rpm-repo"
},
"last_unit_removed": null,
"content_unit_counts": {
 "package_group": 2,
 "distribution": 1,
 "package_category": 1,
 "rpm": 8,
 "erratum": 3
},
"_ns": "repos",
"importers": [
{
 "repo_id": "scenario_test",
 "last_updated": "2017-03-30T21:15:43Z",
 "_href": "/pulp/api/v2/repositories/scenario_test/importers/yum_importer/",
 "_ns": "repo_importers",
 "importer_type_id": "yum_importer",
 "last_override_config": {
 "num_threads": 4,
 "validate": true
 },
 "last_sync": "2017-03-30T21:16:05Z",
 "scratchpad": {
 "repomd_revision": 1321893800
 },
 "_id": {
 "$oid": "58dd757f418a8a04f88de7d7"
 },
 "config": {
 "feed": "file:///var/www/test_repos/zoo",
 "ssl_validation": true,
 "remove_missing": true,
 "download_policy": "immediate"
 },
 "id": "yum_importer"
}
],
"locally_stored_units": 15
```

```
{
 "_id": {
 "$oid": "58dd757f418a8a04f88de7d6"
 },
 "total_repository_units": 15,
 "id": "scenario_test",
 "_href": "/pulp/api/v2/repositories/scenario_test/"
}
```

# Repository Create

## Request # 1: Create Content

POST /candlepin/owners/scenario\_test/content/

Backend Service: candlepin

Description: Create Content object for repository, for subscription-manager content access

Request body

```
{
 "name": "Scenario yum product",
 "contentUrl": "/custom/Scenario_Product/Scenario_yum_product",
 "type": "yum",
 "label": "scenario_test_Scenario_Product_Scenario_yum_product",
 "metadataExpire": 1,
 "vendor": "Custom"
}
```

Response body

```
{
 "created": "2017-03-30T21:15:43+0000",
 "updated": "2017-03-30T21:15:43+0000",
 "uuid": "4028f9515b20f31e015b2112fba4000d",
 "id": "1490908543901",
 "type": "yum",
 "label": "scenario_test_Scenario_Product_Scenario_yum_product",
 "name": "Scenario yum product",
 "vendor": "Custom",
 "contentUrl": "/custom/Scenario_Product/Scenario_yum_product",
 "requiredTags": null,
 "gpgUrl": null,
 "metadataExpire": 1,
 "modifiedProductIds": [
],
 "arches": null,
 "releaseVer": null
}
```

## Request # 2: Associate content object

POST /candlepin/owners/scenario\_test/products/272869743822/content/1490908543901

Backend Service: candlepin

Description: Add the Content object to the product

Request body

None

Response body

```
{
 "created": "2017-03-30T21:15:42+0000",
 "updated": "2017-03-30T21:15:44+0000",
 "uuid": "4028f9515b20f31e015b2112fc03000e",
 "id": "272869743822",
 "name": "Scenario Product",
 "multiplier": 1,
 "attributes": [
 {
 "created": "2017-03-30T21:15:42+0000",
 "updated": "2017-03-30T21:15:44+0000",
 "name": "arch",
 "value": "ALL"
 }
],
 "dependentProductIds": [
],
 "href": "/products/4028f9515b20f31e015b2112fc03000e",
 "productContent": [
 {
 "content": {
 "created": "2017-03-30T21:15:43+0000",
 "updated": "2017-03-30T21:15:43+0000",
 "uuid": "4028f9515b20f31e015b2112fba4000d",
 "id": "1490908543901",
 "type": "yum",
 "label": "scenario_test_Scenario_Product_Scenario_yum_product"
 },
 "name": "Scenario yum product",
 "vendor": "Custom",
 "contentUrl": "/custom/Scenario_Product/Scenario_yum_product",
 "requiredTags": null,
 "gpgUrl": null,
 "metadataExpire": 1,
 "modifiedProductIds": [
],
 "arches": null,
 "releaseVer": null
 },
 {
 "enabled": true
 }
]
}
```

## Request # 3: Retrieve candlepin environment

GET /candlepin/environments/119c4753ff6d3.8bd0b76de6d5a5f94a

Backend Service: candlepin

Description: Retrieve the environment object (TODO WHY?)

Request body

None

Response body

```
{
 "owner": {
 "id": "4028f9515b20f31e015b2112f2550004",
 "key": "scenario_test",
 "displayName": "scenario_test",
 "href": "/owners/scenario_test"
 },
 "name": "Library",
 "description": null,
 "id": "119c4753ff6d3.8bd0b76de6d5a5f94a",
 "environmentContent": [
],
 "created": "2017-03-30T21:15:41+0000",
 "updated": "2017-03-30T21:15:41+0000"
}
```

## Request # 4: Create Pulp Repository

POST /pulp/api/v2/repositories/

Backend Service: pulp

Description:

## Request body

```
{
 "id": "scenario_test",
 "display_name": "Scenario yum product",
 "importer_type_id": "yum_importer",
 "importer_config": {
 "feed": "file:///var/www/test_repos/zoo",
 "ssl_ca_cert": null,
 "ssl_client_cert": null,
 "ssl_client_key": null,
 "ssl_validation": true,
 "download_policy": "immediate",
 "remove_missing": true
 },
 "notes": {
 "_repo-type": "rpm-repo"
 },
 "distributors": [
 {
 "distributor_type_id": "yum_distributor",
 "distributor_config": {
 "relative_url": "scenario_test",
 "http": false,
 "https": true,
 "protected": true
 },
 "auto_publish": true,
 "distributor_id": "scenario_test"
 },
 {
 "distributor_type_id": "export_distributor",
 "distributor_config": {
 "http": false,
 "https": false,
 "relative_url": "scenario_test"
 },
 "auto_publish": false,
 "distributor_id": "export_distributor"
 },
 {
 "distributor_type_id": "yum_clone_distributor"
 },
 {
 "distributor_config": {
 "destination_distributor_id": "scenario_test"
 },
 "auto_publish": false,
 "distributor_id": "scenario_test_clone"
 }
]
}
```

## Response body

```
{
 "scratchpad": {
 },
 "display_name": "Scenario yum product",
 "description": null,
 "last_unit_added": null,
 "notes": {
 "_repo-type": "rpm-repo"
 },
 "last_unit_removed": null,
 "content_unit_counts": {
 },
 "_ns": "repos",
 "_id": {
 "$oid": "58dd757f418a8a04f88de7d6"
 },
 "id": "scenario_test",
 "_href": "/pulp/api/v2/repositories/scenario_test/"
}
```

## Request # 5: Add Content To environment

POST /candlepin/environments/119c4753ff6d3.8bd0b76de6d5a5f94a/content

Backend Service: candlepin

Description: Associates content object to "Library" environment, so it is accessible by clients registered to Library

## Request body

```
[
 {
 "contentId": "1490908543901"
 }
]
```

Response body

```
{
 "id": "regen_entitlement_cert_of_envda871caa-8138-4edd-acc9-605195f992a4",
 "state": "CREATED",
 "startTime": null,
 "finishTime": null,
 "result": null,
 "principalName": "foreman_admin",
 "targetType": null,
 "targetId": null,
 "ownerId": null,
 "resultData": null,
 "statusPath": "/jobs/regen_entitlement_cert_of_envda871caa-8138-4edd-acc9-605195f992a4",
 "done": false,
 "group": "async group",
 "created": "2017-03-30T21:15:44+0000",
 "updated": "2017-03-30T21:15:44+0000"
}
```

## Request # 6: Fetch repository information

GET /pulp/api/v2/repositories/scenario\_test/

Backend Service: pulp

Description:

Request body

None

Response body

```
{
 "scratchpad": {
 },
 "display_name": "Scenario yum product",
 "description": null,
 "distributors": [
 {
 "repo_id": "scenario_test",
 "last_updated": "2017-03-30T21:15:43Z",
 "_href": "/pulp/api/v2/repositories/scenario_test/distributors/scenario_test_clone/"
 },
 "last_override_config": {
 },
 "last_publish": null,
 "distributor_type_id": "yum_clone_distributor",
 "auto_publish": false,
 "scratchpad": {
 },
 "_ns": "repo_distributors",
 "_id": {
 "$oid": "58dd757f418a8a04f88de7da"
 },
 "config": {
 "destination_distributor_id": "scenario_test"
 },
 "id": "scenario_test_clone"
 },
 "repo_id": "scenario_test",
 "last_updated": "2017-03-30T21:15:43Z",
 "_href": "/pulp/api/v2/repositories/scenario_test/distributors/scenario_test/",
 "last_override_config": {
 },
 "last_publish": null,
 "distributor_type_id": "yum_distributor",
 "auto_publish": true,
 "scratchpad": {
 },
 "_ns": "repo_distributors",
 "_id": {
 "$oid": "58dd757f418a8a04f88de7d8"
 },
 "config": {
 "protected": true,
 "http": false,
 "https": true,
 "username": null,
 "password": null
 }
}
```

```

 "relative_url": "scenario_test"
},
"id": "scenario_test"
},
{
"repo_id": "scenario_test",
"last_updated": "2017-03-30T21:15:43Z",
"_href": "/pulp/api/v2/repositories/scenario_test/distributors/export_distributor/",
"last_override_config": {
},
"last_publish": null,
"distributor_type_id": "export_distributor",
"auto_publish": false,
"scratchpad": {
},
"ns": "repo_distributors",
"_id": {
"$oid": "58dd757f418a8a04f88de7d9"
},
"config": {
"http": false,
"relative_url": "scenario_test",
"https": false
},
"id": "export_distributor"
}
],
"last_unit_added": null,
"notes": {
"_repo-type": "rpm-repo"
},
"last_unit_removed": null,
"content_unit_counts": {
},
"_ns": "repos",
"importers": [
{
"repo_id": "scenario_test",
"last_updated": "2017-03-30T21:15:43Z",
"_href": "/pulp/api/v2/repositories/scenario_test/importers/yum_importer/",
"_ns": "repo_importers",
"importer_type_id": "yum_importer",
"last_override_config": {
},
"last_sync": null,
"scratchpad": null,
"_id": {
"$oid": "58dd757f418a8a04f88de7d7"
},
"config": {
"feed": "file:///var/www/test_repos/zoo",
"ssl_validation": true,
"remove_missing": true,
"download_policy": "immediate"
},
"id": "yum_importer"
}
],
"locally_stored_units": 0,
"_id": {
"$oid": "58dd757f418a8a04f88de7d6"
},
"total_repository_units": 0,
"id": "scenario_test",
"_href": "/pulp/api/v2/repositories/scenario_test/"
}
}

```

## Request # 7: Publish repository metadata

POST /pulp/api/v2/repositories/scenario\_test/actions/publish/

Backend Service: pulp

Description: Publish the repository, generating empty metadata so that existing clients of that product do not get a 404.

Request body

```
{
 "id": "scenario_test",
 "override_config": {
 "force_full": false
 }
}
```

Response body

```
{
 "spawned_tasks": [
 {
 "_href": "/pulp/api/v2/tasks/dfdb7cae-e465-4885-b3a4-7bb29343b69e/"
 },
 "task_id": "dfdb7cae-e465-4885-b3a4-7bb29343b69e"
],
 "result": null,
 "error": null
}
```

## Request # 8: Poll Task

GET /pulp/api/v2/tasks/dfdb7cae-e465-4885-b3a4-7bb29343b69e/

Backend Service: pulp

Description: Monitor the task status of the publish

Total Requests for this URL: 6

Request body

None

Response body

```
{
 "exception": null,
 "task_type": "pulp.server.managers.repo.publish.publish",
 "_href": "/pulp/api/v2/tasks/dfdb7cae-e465-4885-b3a4-7bb29343b69e/",
 "task_id": "dfdb7cae-e465-4885-b3a4-7bb29343b69e",
 "tags": [
 "pulp:repository:scenario_test",
 "pulp:action:publish"
],
 "finish_time": "2017-03-30T21:15:44Z",
 "_ns": "task_status",
 "start_time": "2017-03-30T21:15:44Z",
 "traceback": null,
 "spawned_tasks": [
],
 "progress_report": {
 "scenario_test": [
 {
 "num_success": 1,
 "description": "Initializing repo metadata",
 "step_type": "initialize_repo_metadata",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "e3a30d24-1111-4080-92f8-0a3dc979ae9c",
 "num_processed": 1
 },
 {
 "num_success": 0,
 "description": "Publishing Distribution files",
 "step_type": "distribution",
 "items_total": 0,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "c2edbc90-716d-4570-a442-bd0c22748f88",
 "num_processed": 0
 },
 {
 "num_success": 0,
 "description": "Publishing RPMs",
 "step_type": "rpms",
 "items_total": 0,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "bfea7f15-21d9-4cf0-af2a-5cce0c1c172b",
 "num_processed": 0
 }
]
 }
}
```

```
"num_success": 0,
"description": "Publishing Delta RPMs",
"step_type": "drpms",
"items_total": 1,
"state": "SKIPPED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "47621356-70b3-4e77-a8f2-ee1ec0c5c2ee",
"num_processed": 0
},
{
"num_success": 0,
"description": "Publishing Errata",
"step_type": "errata",
"items_total": 0,
"state": "FINISHED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "8e46b5e2-89f5-4ef5-80bd-0d2aab9dd2a0",
"num_processed": 0
},
{
"num_success": 0,
"description": "Publishing Comps file",
"step_type": "comps",
"items_total": 0,
"state": "FINISHED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "050aba89-abec-4949-b3cf-28409d9519e0",
"num_processed": 0
},
{
"num_success": 0,
"description": "Publishing Metadata.",
"step_type": "metadata",
"items_total": 0,
"state": "FINISHED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "70efd383-905d-4fe2-8c9b-4e18311e76d5",
"num_processed": 0
},
{
"num_success": 1,
"description": "Closing repo metadata",
"step_type": "close_repo_metadata",
"items_total": 1,
"state": "FINISHED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "e3ae5910-8f8d-4e53-abd6-007a9495e0b4",
"num_processed": 1
},
{
"num_success": 0,
"description": "Generating sqlite files",
"step_type": "generate sqlite",
"items_total": 1,
"state": "SKIPPED",
"error_details": [
],
"details": "",
"num_failures": 0,
"step_id": "ae023865-a176-4434-b8ab-77a080306602",
"num_processed": 0
},
{
"num_success": 0,
"description": "Generating HTML files",
"step_type": "repoview",
"items_total": 1,
"state": "SKIPPED",
"error_details": [
],
"details": "",
"num_failures": 0,
```

```
"num_failures": 0,
"step_id": "4d7ca329-7b33-478e-a0a5-777771d8c7c6",
"num_processed": 0
},
{
 "num_success": 1,
 "description": "Publishing files to web",
 "step_type": "publish_directory",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "0989644f-85dc-43ff-9e0f-10c814a8d5e8",
 "num_processed": 1
},
{
 "num_success": 1,
 "description": "Writing Listings File",
 "step_type": "initialize_repo_metadata",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "04b588ee-11fe-4b09-8a42-2ea465247c0b",
 "num_processed": 1
}
]
},
"queue": "reserved_resource_worker-1@dev.example.com.dq",
"state": "finished",
"worker_name": "reserved_resource_worker-1@dev.example.com",
"result": {
 "result": "success",
 "exception": null,
 "repo_id": "scenario_test",
 "started": "2017-03-30T21:15:44Z",
 "_ns": "repo_publish_results",
 "completed": "2017-03-30T21:15:44Z",
 "traceback": null,
 "distributor_type_id": "yum_distributor",
 "summary": {
 "generate_sqlite": "SKIPPED",
 "initialize_repo_metadata": "FINISHED",
 "rpms": "FINISHED",
 "close_repo_metadata": "FINISHED",
 "drpms": "SKIPPED",
 "comps": "FINISHED",
 "distribution": "FINISHED",
 "repoview": "SKIPPED",
 "publish_directory": "FINISHED",
 "errata": "FINISHED",
 "metadata": "FINISHED"
 },
 "error_message": null,
 "distributor_id": "scenario_test",
 "id": "58dd7580418a8a0648b9bc40",
 "details": [
 {
 "num_success": 1,
 "description": "Initializing repo metadata",
 "step_type": "initialize_repo_metadata",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "e3a30d24-1111-4080-92f8-0a3dc979ae9c",
 "num_processed": 1
 },
 {
 "num_success": 0,
 "description": "Publishing Distribution files",
 "step_type": "distribution",
 "items_total": 0,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "c2edbc90-716d-4570-a442-bd0c22748f88",
 "num_processed": 0
 },
 {
 "num_success": 0,
 "description": "Publishing RPMs"
 }
]
}
```

```
 "description": "Pushing RPMs",
 "step_type": "rpms",
 "items_total": 0,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "bfea7f15-21d9-4cf0-af2a-5cce0c1c172b",
 "num_processed": 0
 },
 {
 "num_success": 0,
 "description": "Publishing Delta RPMs",
 "step_type": "drpms",
 "items_total": 1,
 "state": "SKIPPED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "47621356-70b3-4e77-a8f2-ee1ec0c5c2ee",
 "num_processed": 0
 },
 {
 "num_success": 0,
 "description": "Publishing Errata",
 "step_type": "errata",
 "items_total": 0,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "8e46b5e2-89f5-4ef5-80bd-0d2aab9dd2a0",
 "num_processed": 0
 },
 {
 "num_success": 0,
 "description": "Publishing Comps file",
 "step_type": "comps",
 "items_total": 0,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "050aba89-abec-4949-b3cf-28409d9519e0",
 "num_processed": 0
 },
 {
 "num_success": 0,
 "description": "Publishing Metadata.",
 "step_type": "metadata",
 "items_total": 0,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "70efd383-905d-4fe2-8c9b-4e18311e76d5",
 "num_processed": 0
 },
 {
 "num_success": 1,
 "description": "Closing repo metadata",
 "step_type": "close_repo_metadata",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "e3ae5910-8f8d-4e53-abd6-007a9495e0b4",
 "num_processed": 1
 },
 {
 "num_success": 0,
 "description": "Generating sqlite files",
 "step_type": "generate_sqlite",
 "items_total": 1,
 "state": "SKIPPED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "ae023865-a176-4434-b8ab-77a080306602",
 "num_processed": 1
 }
]
```

```
"num_processed": 0
},
{
 "num_success": 0,
 "description": "Generating HTML files",
 "step_type": "repoview",
 "items_total": 1,
 "state": "SKIPPED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "4d7ca329-7b33-478e-a0a5-777771d8c7c6",
 "num_processed": 0
},
{
 "num_success": 1,
 "description": "Publishing files to web",
 "step_type": "publish_directory",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "0989644f-85dc-43ff-9e0f-10c814a8d5e8",
 "num_processed": 1
},
{
 "num_success": 1,
 "description": "Writing Listings File",
 "step_type": "initialize_repo_metadata",
 "items_total": 1,
 "state": "FINISHED",
 "error_details": [
],
 "details": "",
 "num_failures": 0,
 "step_id": "04b588ee-11fe-4b09-8a42-2ea465247c0b",
 "num_processed": 1
},
],
 "error": null,
 "id": {
 "$oid": "58dd7580e6919db96421ea12"
 },
 "id": "58dd7580e6919db96421ea12"
}
```

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