

# Lifecycle management with Foreman and Katello **Basics and Spacewalk migration**

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[www.stankowic-development.net](http://www.stankowic-development.net)

Free and Open Source software  
Conference

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# AGENDA

# Agenda

Overview

Installation

Content management

Puppet

Automation

Spacewalk migration

# OVERVIEW

# What is Foreman?

Open-source lifecycle management suite

Creating, configuring and inventoring<sup>1</sup> systems

Support configuration using Puppet or optionally<sup>2</sup> Chef, Salt and Ansible

1. Facts, *system profiling*
2. per plug-in

# facter

```
1 $ facter -p
2 architecture => x86_64
3 domain => stankowic.loc
4 interfaces => docker0,ens192,lo
5 ...
6 memoryfree => 1.14 GB
7 processor0 => Intel(R) Xeon(R) CPU D-1518
   @ 2.20GHz
8 virtual => vmware
```

Listing 1: facter output

# Plug-ins

Currently **nearly 100 plug-ins** available online

Some examples:

Cockpit

Monitoring

Jenkins CI

Slack

Third-party DNS-/DHCP



# Virtualize all the workloads

Integration into popular hypervisors and cloud platforms:

VMware vSphere<sup>3</sup>

oVirt

Amazon EC2

Microsoft Azure

XEN

OpenStack, OpenNebula

## 3. ESXi and vCenter Server

# Additional features

Roll-based configuration

Multitenancy

Integration into LDAP, FreeIPA and  
Microsoft Active Directory Domain Services

Distributing infrastructure services to  
satellite instances

Well-documented RESTful API for  
automation purposes

# What is Katello?

Content management plug-in for Foreman

Combines **Pulp** and ~~Fiction~~ **Candlepin** software projects

Synchronizes OSTree/RPM packages<sup>4</sup> and Docker/Puppet modules

4. DEB support **in progress**

# Additional features

Managing errata

Managing subscriptions and channel permissions

Snapshots, freezing content versions (*e.g. Dev, QA, Prod*)

## Errata

All Repositories

 Applicable  Installable

Search...



Showing 60 of 3925 (3925 Total)

0 Selected

Apply Errata

- Errata ID
- FEDORA-EPEL-2017-f045cf2c33
- FEDORA-EPEL-2017-0e2a540644
- FEDORA-EPEL-2017-5f85d17ad6
- FEDORA-EPEL-2017-2c3a1062a0
- FEDORA-EPEL-2017-b39314b704
- FEDORA-EPEL-2017-4f8e561d50
- FEDORA-EPEL-2016-6103c4ed2e
- FEDORA-EPEL-2017-bce09f3520
- FEDORA-EPEL-2017-2dee41bb7a

**Advisory** FEDORA-EPEL-2017-6efbf9d893

**CVEs** N/A

**Type** Bug Fix Advisory

**Severity** N/A

**Issued** 8/9/17

**Last Updated On**

**Reboot Suggested?** No

## Topic

fldigi-4.0.8-1.el7 bugfix update

## Description

Version 4.0.8

\* Maintenance release

Fix OS X path name to executable when SPACE chars are in path name

Fix Flex serial interface problem

rigCAT metering

Change to allow multiple scale points in both Smeter and Power meter

# Foreman/Katello vs. Satellite 6

	<b>Foreman</b>	<b>RHS6</b>
Releases	1-2 months	11 months
Puppet version	4.x	3.6 <sup>5</sup>
Server OS	\$Linux	RHEL
Support	×	✓ <sup>6</sup>
Orchestration	Smart Proxy	Capsule
RHN	×	✓ <sup>7</sup>

5. Puppet 4.x beginning with release 6.3

6. Using CLI, WebUI and API, no third-party plug-ins; see also **documentation**

7. Using Subscription Manager

# INSTALLATION

# Installation

Foreman is pre-compiled for:

Debian 8

Fedora 24

Ubuntu 14.04 / 16.04

Enterprise Linux (*RHEL, CentOS, SL*) 7

Katello packages are only pre-compiled for  
**EL6 / 7 x86\_64!**



# Requirements

at least 2 cores

minimum of 8 GB memory (12  
*recommended*)

30 GB storage per operating system  
recommended

see also: **[theforeman.org/plugins/katello](http://theforeman.org/plugins/katello)**

# Preparation

## Dedicated file systems:

`/var/spool/squid` (*cache, 10 GB*)

`/var/lib/mongodb` (*Katello, 10 GB, inodes!*)

`/var/lib/pulp` (*content, 30 GB*)

`/var/lib/pgsql` (*Foreman, 10 GB*)

## Open network ports:

`http/https`

`tcp/5647` - client communication

`tcp/9090` - Smart Proxy / Capsule

## Software installation 1/2

Adding software package sources per distribution (*Katello, Foreman, Puppet,...*)

Installing the `katello` package inherits dependencies

Create snapshot!

`foreman-installer` automatically configures required services

## Software installation 2/2

Evaluate additional options:

```
foreman-installer --scenario katello -h
```

```
1 # foreman-installer --scenario katello --  
  foreman-initial-organization "Stankowic"  
  --foreman-initial-location "Homelab"
```

Listing 2: Installation with customized organization and location

# Overview

Filter ...

 x  ▾

Generated at 11 Aug 09:39

Manage ▾



Documentation

## Host Configuration Status

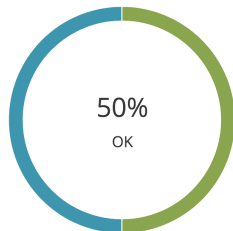
— x

<span style="color: blue;">■</span> Hosts that had performed modifications without error	0
<span style="color: red;">■</span> Hosts in error state	0
<span style="color: green;">■</span> Good host reports in the last 35 minutes	5
<span style="color: purple;">■</span> Hosts that had pending changes	0
<span style="color: teal;">■</span> Out of sync hosts	5
<span style="color: orange;">■</span> Hosts with no reports	0
<span style="color: blue;">■</span> Hosts with alerts disabled	0

Total Hosts: 10

## Host Configuration Chart

— x



## Latest Events

— x

Host	A	R	F	FR	S	P
st-web04.sta...	1	0	0	0	0	0
st-storage03...	1	0	0	0	0	0

## Run Distribution (last 30 minutes)

— x



# CONTENT

## **Parent** and **child** channels with 1+ **repositories**

Systems are assigned to parent and optional child channels

Automatic assignment using activation key possible

## **Product** with 1+ **repositories**

Versions are freezed in **content views**

Content view contains 1+ repositories<sup>8</sup>

Content view can apply YUM filters

8. YUM, file, Docker or Puppet content



# CentOS Stankowic 7

Publish New Version ▾

[Content Views](#) > [CentOS Stankowic 7](#) > Yum Repositories

 Details Versions **Yum Content ▾** File Repositories Puppet Modules Docker Content OSTree Content History Tasks

## Repository Selection

List/Remove Add

Filter... Search ▾

Remove Repositories

Showing 7 of 7 (7 Total)

0 Selected

<input type="checkbox"/>	Name	Product	Last Sync	Sync State	Content
<input type="checkbox"/>	<a href="#">extras x86_64</a>	CentOS 7 x86_64	2017-08-11 01:00:58 UTC	Success	449 Packages 0 Errata
<input type="checkbox"/>	<a href="#">icinga2 EL7 x86_64</a>	Icinga2 EL7 x86_64	2017-08-11 01:00:54 UTC	Success	221 Packages 0 Errata
<input type="checkbox"/>	<a href="#">Katello Client EL7 x86_64</a>	Katello Client EL7 x86_64	2017-08-11 01:00:50 UTC	Success	16 Packages 0 Errata
<input type="checkbox"/>	<a href="#">os x86_64</a>	CentOS 7 x86_64	2017-08-11 01:00:59 UTC	Success	9363 Packages 0 Errata
<input type="checkbox"/>	<a href="#">plus x86_64</a>	CentOS 7 x86_64	2017-08-11 01:00:30 UTC	Success	101 Packages 0 Errata
<input type="checkbox"/>	<a href="#">updates x86_64</a>	CentOS 7 x86_64	2017-08-11 01:00:54 UTC	Success	2146 Packages 0 Errata

# YUM filter

Adding or removing:

- Packages

- Package groups

- Errata (*by means of ID, date or type*)

Good choice for fixed maintenance windows  
(*e.g Q1 updates*)

Filters can be combined

## CentOS Stankowic 7

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[Content Views](#) » [CentOS Stankowic 7](#) » [Filters](#) » Q1 2017 errata[Details](#) [Versions](#) [Yum Content ▾](#) [File Repositories](#) [Puppet Modules](#) [Docker Content](#) [OSTree Content](#) [History](#) [Tasks](#)

## Q1 2017 errata

Type: Include Errata

[Details](#) [Erratum Date Range](#) [Affected repositories](#) **all**

## Errata Type

 Security  Enhancement  Bugfix

## Date Type

 Updated On  Issued On

## Start Date

1970-01-01 

## End Date

2017-03-31 [Save](#) [Cancel](#)

# Composite Content View

Combines multiple Content View in a single view

Good choice if OS and application packages are versioned independently

Filters are overwritten

## CentOS + GiertzApp

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[Content Views](#) » [CentOS + GiertzApp](#) » Add Content ViewsDetails Versions **Content Views** History TasksList/Remove **Add**

## Add Content Views to CentOS + GiertzApp

Filter...

Search ▾

Add Content Views

Showing 2 of 2 (2 Total)

0 Selected

<input type="checkbox"/>	Name	Version	Environment	Description	Content
<input type="checkbox"/>	CentOS Stankowic 7	Always Use Latest (Current) ▾	Library, Dev, Prod	CentOS 7 content view	<a href="#">8 Repositories</a> <a href="#">18 Puppet Modules</a>
<input type="checkbox"/>	GiertzApp	Always Use Latest (Current) ▾	Library, Dev, Prod	Just another shitty application	<a href="#">0 Repositories</a> <a href="#">0 Puppet Modules</a>

# Lifecycle Environments

Systems can be separated into environments<sup>9</sup>, e.g.:

Dev

QA

Prod

Content View versions are assigned to environments

9. By default, all systems are assigned to Library

# Releasing patches

Import new patches, update Content View<sup>10</sup>

Release patches for Dev (*promote*)<sup>11</sup>

Test patches

Release patches for QA

Release patches for Prod

see also `katello-cvmanager`

10, 11. manually or using API (z.B. hammer)

# CentOS Stankowic 7

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[Content Views](#) » [CentOS Stankowic 7](#) » [Publish](#)[Details](#) [Versions](#) [Yum Content ▾](#) [File Repositories](#) [Puppet Modules](#) [Docker Content](#) [OSTree Content](#) [History](#) [Tasks](#)

## Publish New Version

A new version of CentOS Stankowic 7 will be created and promoted to the Library environment. It can be promoted to other environments from the Versions tab of this Content View.

## Version Details

### Version

18.0

### Description

Updated packages from upstream



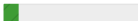



## CentOS Stankowic 7

Publish New Version ▾

[Content Views](#) » [CentOS Stankowic 7](#) » Versions
[Details](#)
[Versions](#)
[Yum Content ▾](#)
[File Repositories](#)
[Puppet Modules](#)
[Docker Content](#)
[OSTree Content](#)
[History](#)
[Tasks](#)

 ▾

Showing 2 of 2 (2 Total)

Version	Status	Environments	Content	Description	Actions
<a href="#">Version 18.0</a>	 Publishing and promoting to 1 environment.	Library			<input type="button" value="Promote"/> <input type="button" value="Remove"/>
<a href="#">Version 17.0</a>	Promoted to Prod (2017-07-18 15:11:18 UTC)	Dev Prod	24130 Packages 3776 Errata ( 155  ) 1059  986  ) 18 Puppet Modules 1 Docker Manifests 1 Docker Tags	Added CentOS extra repository	<input type="button" value="Promote"/> <input type="button" value="Remove"/>

# CentOS Stankowic 7







Publish New Version ▾

[Content Views](#) » [CentOS Stankowic 7](#) » Versions

 Details **Versions** Yum Content ▾ File Repositories Puppet Modules Docker Content OSTree Content History Tasks

Filter... Search ▾

Showing 2 of 2 (2 Total)

Version	Status	Environments	Content	Description	Actions
<a href="#">Version 18.0</a>	Published (2017-08-11 11:09:59 UTC)	Library	24230 Packages 3807 Errata ( 157  ) 1074  983  ) 18 Puppet Modules 1 Docker Manifests 1 Docker Tags	Updated packages from upstream	<input type="button" value="Promote"/> <input type="button" value="Remove"/>
<a href="#">Version 17.0</a>	Promoted to Prod (2017-07-18 15:11:18 UTC)	Dev Prod	24130 Packages 3776 Errata ( 155  ) 1059  986  ) 18 Puppet Modules 1 Docker Manifests 1 Docker Tags	Added CentOS extra repository	<input type="button" value="Promote"/> <input type="button" value="Remove"/>

## CentOS Stankowic 7

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## Promote Version 18.0

Choose a lifecycle environment from the available promotion paths.

★ Starred environments are suggested for promotion.

Library

 ★ Dev Prod

## Description

Promote Version

Cancel

# CentOS Stankowic 7







Publish New Version ▾

[Content Views](#) » [CentOS Stankowic 7](#) » Versions

 Details **Versions** Yum Content ▾ File Repositories Puppet Modules Docker Content OSTree Content History Tasks

Filter... Search ▾

Showing 2 of 2 (2 Total)

Version	Status	Environments	Content	Description	Actions
<a href="#">Version 18.0</a>	Promoted to Dev (2017-08-11 11:29:53 UTC)	Library Dev	24230 Packages 3807 Errata ( 157  ) 1074  983  ) 18 Puppet Modules 1 Docker Manifests 1 Docker Tags	Updated packages from upstream	<a href="#">Promote</a> <a href="#">Remove</a>
<a href="#">Version 17.0</a>	Promoted to Prod (2017-07-18 15:11:18 UTC)	Prod	24130 Packages 3776 Errata ( 155  ) 1059  986  ) 18 Puppet Modules 1 Docker Manifests 1 Docker Tags	Added CentOS extra repository	<a href="#">Promote</a> <a href="#">Remove</a>

## CentOS Stankowic 7

Publish New Version ▾

[Content Views](#) » [CentOS Stankowic 7](#) » Promotion[Details](#)[Versions](#)[Yum Content ▾](#)[File Repositories](#)[Puppet Modules](#)[Docker Content](#)[OSTree Content](#)[History](#)[Tasks](#)

## Promote Version 18.0

Choose a lifecycle environment from the available promotion paths.

★ Starred environments are suggested for promotion.

Library

Dev

 ★Prod

## Description

Promote Version

Cancel

# CentOS Stankowic 7







Publish New Version ▾

[Content Views](#) » [CentOS Stankowic 7](#) » Versions

 Details **Versions** Yum Content ▾ File Repositories Puppet Modules Docker Content OSTree Content History Tasks

Filter... Search ▾

Showing 2 of 2 (2 Total)

Version	Status	Environments	Content	Description	Actions
<a href="#">Version 18.0</a>	Promoted to Prod (2017-08-11 12:15:12 UTC)	Library Dev Prod	24230 Packages 3807 Errata ( 157  ) 1074  983  ) 18 Puppet Modules 1 Docker Manifests 1 Docker Tags	Updated packages from upstream	<a href="#">Promote</a> <a href="#">Remove</a>
<a href="#">Version 17.0</a>	Promoted to Prod (2017-07-18 15:11:18 UTC)		24130 Packages 3776 Errata ( 155  ) 1059  986  ) 18 Puppet Modules 1 Docker Manifests 1 Docker Tags	Added CentOS extra repository	<a href="#">Promote</a> <a href="#">Remove</a>

PUPPET

**ONE DOES NOT SIMPLY**

**UTILIZE PUPPET**



# Puppet in a nutshell

Client-server application<sup>12</sup>

Master configures and manages agents

Manifests define desired component states<sup>13</sup>

Modular manifests using **facts**

12. Also possible without server

13. System parameters, services, configurations...

# Resource Abstraction Language 1/2

Defining states within manifest

Plenty available resource types: file,  
service, user,...<sup>14</sup>

Listing options per resource: puppet  
describe resourceType

Describing an existing resource: puppet  
resource resourceType name

14. Listing using puppet resource --types

# Resource Abstraction Language 2/2

```
1 $ puppet describe service
2 $ puppet resource service httpd
3 service { 'httpd':
4     ensure => 'started',
5     enable => 'true',
6 }
```

Listing 3: Information about services and describing a service

# Puppet manifests in a nutshell

```
1 $ cat httpd.pp
2 package { "httpd" :
3     ensure => "installed",
4 }
5 # puppet apply httpd.pp
6 ...
7 Notice: Finished catalog run in 8.03
   seconds
```

Listing 4: Manifest to install Apache

# Puppet manifests in a nutshell

```
1 $ cat httpd-file.pp
2 package { "httpd" :
3     ensure => "installed",
4 }
5 file { '/var/www/html/index.html':
6     content => "Yes this is $hostname"
7 }
8 # puppet apply httpd-file.pp
```

Listing 5: Apache manifest including a file and **fact**

# Foreman - Master of Puppets?

Foreman integrates Puppet master and CA<sup>15</sup>

Puppet dashboards<sup>16</sup>

Configuring classes, variables,...

Grouping classes into Config Groups

Environment per Lifecycle Environment

Overrides per host or hostgroup

15. On the master or Smart Proxies/Capsules

16. Activity and compliance

## Host Configuration Status

-- x

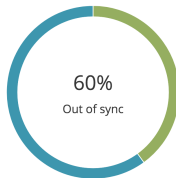
- Hosts that had performed modifications without error
- Hosts in error state
- Good host reports in the last 35 minutes
- Hosts that had pending changes
- Out of sync hosts
- Hosts with no reports
- Hosts with alerts disabled

0  
0  
4  
0  
6  
0  
0

Total Hosts: 10

## Host Configuration Chart

-- x



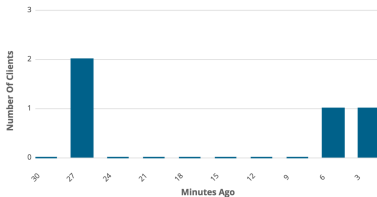
## Latest Events

-- x

Host	A	R	F	FR	S	P
st-web04.stankowic.loc	1	0	0	0	0	0
web5.kiez.loc	1	0	0	0	0	0
yp1.kiez.loc	1	0	0	0	0	0
oprah6.kiez.loc	1	0	0	0	0	0
st-ipa.stankowic.loc	1	0	0	0	0	0
st-ipa.stankowic.loc	1	0	0	0	0	0
st-devel02.stankowic.loc	1	0	0	0	0	0
st-web04.stankowic.loc	1	0	0	0	0	0
st-storage03.stankowic.loc	1	0	0	0	0	0

## Run Distribution (last 30 minutes)

-- x



## Puppet classes

Filter ...

 ×  ▾

Import environments from st-katello01.stankowic.loc

[📖 Documentation](#)

Class name	Environments	Host groups	Hosts	Parameters	Variables	Actions
apt	KT_stankowic_Dev_CentOS_7_3, KT...		0	26	0	<a href="#">Delete</a> ▾
apt::backports	KT_stankowic_Dev_CentOS_7_3, KT...		0	5	0	<a href="#">Delete</a> ▾
apt::update	KT_stankowic_Dev_CentOS_7_3, KT...		0	0	0	<a href="#">Delete</a>
chocolatey	KT_stankowic_Dev_CentOS_7_3, KT...		0	7	0	<a href="#">Delete</a> ▾
chocolatey::config	KT_stankowic_Dev_CentOS_7_3, KT...		0	0	0	<a href="#">Delete</a>
chocolatey::install	KT_stankowic_Dev_CentOS_7_3, KT...		0	0	0	<a href="#">Delete</a>
chocolatey::params	KT_stankowic_Dev_CentOS_7_3, KT...		0	0	0	<a href="#">Delete</a>
fail2ban	KT_stankowic_Dev_CentOS_7_3, KT...		0	29	0	<a href="#">Delete</a> ▾
fail2ban::config	KT_stankowic_Dev_CentOS_7_3, KT...		0	0	0	<a href="#">Delete</a>
fail2ban::install	KT_stankowic_Dev_CentOS_7_3, KT...		0	0	0	<a href="#">Delete</a>
fail2ban::params	KT_stankowic_Dev_CentOS_7_3, KT...		0	0	0	<a href="#">Delete</a>
fail2ban::service	KT_stankowic_Dev_CentOS_7_3, KT...		0	0	0	<a href="#">Delete</a>
firewall	KT_stankowic_Dev_CentOS_7_3, KT...		0	5	0	<a href="#">Delete</a> ▾
firewall::linux	KT_stankowic_Dev_CentOS_7_3, KT...		0	5	0	<a href="#">Delete</a> ▾
firewall::linux::archlinux	KT_stankowic_Dev_CentOS_7_3, KT...		0	5	0	<a href="#">Delete</a> ▾
firewall::linux::debian	KT_stankowic_Dev_CentOS_7_3, KT...		0	5	0	<a href="#">Delete</a> ▾
firewall::linux::gentoo	KT_stankowic_Dev_CentOS_7_3, KT...		0	5	0	<a href="#">Delete</a>



## Edit Puppet Class ssh

Puppet Class **Smart Class Parameter** Smart Variables

Filter by name  @ All environments - (not filtered) ▾ [Documentation](#)

- hiera merge
- keys
- manage firewall
- manage root ssh config
- manage service
- packages
- permit root login**
- purge keys
- root ssh config content

### Parameter details

**Key \***

**Description**

**Puppet Environments**

### Default behavior

Override the default value of the Puppet class parameter.

**Override**  ⓘ

**Key type**  ⓘ

**Default value**  ⓘ

## Puppet Environments

Filter ...

x Q Search ▾

Import environments from st-katello01.stankowic.loc

[New Puppet Environment](#)[Help](#)

Name	Hosts	Actions
KT_stankowic_Dev_CentOS_7_3	4	<a href="#">Classes</a> ▾
KT_stankowic_Library_CentOS_7_3	0	<a href="#">Classes</a> ▾
KT_stankowic_Library_CentOS__GiertzApp_7	0	<a href="#">Classes</a> ▾
KT_stankowic_Prod_CentOS_7_3	6	<a href="#">Classes</a> ▾

Displaying **all 4** entries

## Config groups

Filter ...

x Q Search ▾

Name

generic-configurations

Name \* generic-configurations x

### Included Classes

screen  
ssh  
yum

### Available Classes

Filter classes

- + apt
- + chocolatey
- + fail2ban
- + firewall
- + icinga2
- + ntp

- + puppet
- screen
- ssh
- + stdlib
- + yum
- + zypprepo

Cancel

Submit

## Edit st-devel02.stankowic.loc

Unmanage host

Host

Puppet Classes

Interfaces

Operating System

Parameters

Additional Information

## Included Config Groups

+ generic-configurations

## Included Classes

screen  
ssh  
yum

## Available Config Groups

## Available Classes

+ apt  
+ chocolatey  
+ fail2ban  
+ firewall  
+ icinga2+ ntp  
+ puppi  
+ stdlib  
+ yum  
+ zypprepo

# Third-party modules

Place to be: **Puppetforge**

Copying downloaded Puppet modules into  
Puppet product, updating Content Views

**Double check** dependencies and  
requirements<sup>17</sup>

17. RHNS6 < 6.3 still uses Puppet **v3!**

## Stankowic Puppet

Sync Now ▾

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Filter...

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Remove Puppet Modules

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0 Selected

<input type="checkbox"/>	Name	Author	Version
<input type="checkbox"/>	zyprepo	darin	1.0.2
<input type="checkbox"/>	icinga2	icinga	1.2.1
<input type="checkbox"/>	apt	puppetlabs	3.0.0
<input type="checkbox"/>	powershell	puppetlabs	2.1.0
<input type="checkbox"/>	concat	puppetlabs	3.0.0
<input type="checkbox"/>	registry	puppetlabs	1.1.4
<input type="checkbox"/>	chocolatey	puppetlabs	2.0.2
<input type="checkbox"/>	augeasproviders_core	herculesteam	2.1.3
<input type="checkbox"/>	extlib	puppet	1.1.0
<input type="checkbox"/>	ntp	puppetlabs	4.2.0
<input type="checkbox"/>	puppi	example42	2.2.3
<input type="checkbox"/>	stdlib	puppetlabs	4.16.0
<input type="checkbox"/>	screen	mis	0.2.1

**AUTOMATE**

Foreman and Katello offer a well-documented REST API

Fast integration into customized applications

Documentation **online** and on server<sup>18</sup>

18. <http://hostname/apidoc>



# hammer

Comprehensive tool for controlling Foreman, Katello, Docker,...

Customizable, auto-completion

Managing local or remote systems

More than **50** commands<sup>19</sup>

19. for Foreman and Katello

## Example: Update \_all\_ the repos

- 1 `$ hammer content-view update --async --name CentOS_7`
- 2 `$ hammer content-view publish --async --name CentOS_7`
- 3 `$ hammer content-view version promote --organization Stankowic --to-lifecycle-environment Dev --name CentOS_7`

Listing 6: Updating and promoting a Content View

# Maintenance: Status quo

Maintenance tasks more complex in bigger environments:

- Creating snapshots

- Scheduling monitoring downtimes

- Documenting changes

- Removing snapshots

- ...

Preparation and documentation more time-consuming than maintenance itself



**MISSED IT BY THAT MUCH**

Python toolkit, automates maintenance

Prepares, maintains and cleans systems with single commands

Changelogs using **Pandoc**<sup>20</sup>

integrates into popular hypervisor and monitoring systems:

- KVM, XEN, Hyper-V,... (libvirt)

- VMware vSphere (pyVmomi)

- Nagios/Icinga 1.x and Icinga2

20. currently templates for Markdown and HTML

Supports plenty of filters<sup>21</sup>

Automatically restarts systems if an update requires it

Configuration via system parameter<sup>22</sup>

Able to gather information from VM and monitoring systems automatically (*auto-discovery*)

Join the development: **GitHub**

21. Organization, location, hostgroup, environment

22. Snapshots, monitoring,...

# Installation

Download and install toolkit

Enter login data

Auto-discover information or bulk enter information

*(Simulate)* maintenance

# Commands

Manage login data: `katprep_authconfig`

Discover/set parameter: `katprep_populate /  
katprep_parameters`

System landscape snapshot:  
`katprep_snapshot`

Control maintenance: `katprep_maintenance`

Create reports: `katprep_report`



# Procedure

Create system landscape snapshot

Prepare, execute and verify maintenance

Create another system landscape snapshot

Create reports

Be happy about spare time :-)

# katprep\_maintenance

Work with `-n / --dry-run!`

Prepare maintenance: `prepare`

Execute maintenance: `execute`

Verify status: `verify`

Remove snapshots and co: `cleanup`

Revoke: `rollback`<sup>23</sup>

23. not implemented yet

# System maintenance report for giertz.pinkepank.loc

## Meta information

IP	Date	Time	Owner
192.168.42.1	2017-06-26	14:21	Christian Stankowic

## Task checklist

Task	Status	Description/Notes
Snapshot created	true	false
Monitoring disabled	true	
System rebooted		
Monitoring status	Ok	
Monitoring enabled	true	

## Patch list

Type	Name	Date	Description	Reboot required?
bugfix	RHBA-2017:1554	2017-06-20	<p>Red Hat Satellite is a system management solution that allows organizations to configure and maintain their systems without the necessity to provide public Internet access to their servers or other client systems. It performs provisioning and configuration management of predefined standard operating environments.</p> <p>This update fixes the following bug:</p> <p>Previously, when applying two errata to one thousand hosts the Gofer Agent daemon (goferd) sometimes terminated unexpectedly with a segmentation fault. The code has been improved and goferd no longer falls in the scenario described. (BZ#1418557)</p> <p>Users of Red Hat Satellite Tools on all Red Hat Enterprise Linux versions are advised to upgrade to these updated packages.</p>	false
security	RHSA-2017:1486	2017-06-19	<p>The kernel packages contain the Linux kernel, the core of any Linux operating system.</p> <p>Security Fix(es):</p> <ul style="list-style-type: none"><li>A flaw was found in the way memory was being allocated on the stack for user space binaries. If heap (or different memory region) and stack memory regions were adjacent to each other, an attacker could use this flaw to jump over the stack guard gap, cause controlled memory corruption on process stack or the adjacent memory region, and thus increase their privileges on the system. This is a kernel-side mitigation which increases the stack guard gap size from one page to 1 MiB to make successful exploitation of this issue more difficult. (CVE-2017-1000364, Important)</li></ul> <p>Red Hat would like to thank Qualys Research Labs for reporting this issue.</p>	true
security	RHSA-2017:1480	2017-06-19	<p>The glibc packages provide the standard C libraries (libc), POSIX thread libraries (libpthread), standard math libraries (libm), and the name service cache daemon (nscd) used by multiple programs on the system. Without these libraries, the Linux system cannot function correctly.</p> <p>Security Fix(es):</p> <ul style="list-style-type: none"><li>A flaw was found in the way memory was being allocated on the stack for user space binaries. If heap (or different memory region) and stack memory regions were adjacent to each other, an attacker could use this flaw to jump over the stack guard gap, cause controlled memory corruption on process stack or the adjacent memory region, and thus increase their privileges on the system. This is glibc-side mitigation which blocks processing of LD_LIBRARY_PATH for programs running in secure-execution mode and reduces the number of allocations performed by the processing of LD_AUDIT, LD_PRELOAD, and LD_HWCAP_MASK, making successful exploitation of this issue more difficult. (CVE-2017-1000366)</li></ul> <p>Red Hat would like to thank Qualys Research Labs for reporting this issue.</p>	true

This report was created automatically by [katprep](#)

**MIGRATION**

# Differences to Spacewalk

	<b>Spacewalk</b>	<b>Foreman</b>
Database	PGSQL, Oracle	MongoDB + PGSQL
Client OS	RPM	RPM, DEB <sup>24</sup>
Configuration	custom <sup>25</sup>	Puppet
Software	Channel : Repos	Repos : Products : CVs
Activation		manual, key
Orchestration	Proxy	Capsule

24. Foreman-only, experimental Pulp support

25. **SUSE Manager** implements **Salt**

# Passive procedure

Installation a new system

Represent software sources and states

Create configurations on the basis of test systems

Migrating systems successively

see also **Transitioning from Red Hat Satellite 5 to 6**

# Adding new clients

Executing Bootstrap script<sup>26</sup>

Installing Puppet and katello-agent<sup>27</sup>

Assigning/checking subscriptions

Updating additional information<sup>28</sup>

26. <http://server/pub/bootstrap.py>

27. For checking installed errata

28. User, hostgroups, katprep,...

# Bootstrap

Registers new systems

Removes old RHN packages  
(yum-rhn-plugin, rhnsd, osad,...)

Migrates systems from Spacewalk and Red Hat Satellite 5

Optionally specifies activation keys,  
hostgroups, organization,...



RHEL systems only retrieve a temporary *wibbly-wobbly* subscription<sup>29</sup> if the license cannot be validated

For virtualized systems, hypervisors<sup>30</sup> need to be marked as Content Hosts

Validating subscriptions using subscription-manager<sup>31</sup>

29. maximal 24 hours

30. VMware vSphere, Red Hat Enterprise Virtualization and Microsoft Hyper-V

31. see also **documentation**

## Dr. virt-who 2/2

virt-who<sup>32</sup> checks Host-VM assignments against linked manifest

Service knows about licenses and installations

Under-licensing nearly impossible

Assigning installations to contracts possible

**32. RE-GIS-TRATE!**

# Temporary subscription

```
1 # subscription-manager status
2 ...
3 Overall Status: Insufficient
4 ...
5 - Guest has not been reported on any host
   and is using a temporary unmapped
6 guest subscription.
```

Listing 7: Temporary subscription because of missing license validation

QUESTIONS?

# Links

Foreman website

Katello plug-in

Red Hat Satellite 6 documentation

Puppetforge

katprep framework

Foreman/Katello blog post series

Thanks for your attention!

<http://www.stankowic-development.net>



@stankowic\_devel



Christian Stankowic



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