Advanced Systems Management with Machinery

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Who Are We?

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Alfred's Challenges

- Administrate old machine because former admin has left the company
- Make sure all security updates are installed, incl. software from tar-balls
- Migrate to new OS version
- Ensure system's configuration complies to company rules
- Validate that OS is set up according to application's requirements
What is Machinery?
Use Case Areas

Configuration Discovery
System Validation
Service Migration
Configuration Discovery
System Validation
Service Migration
Use Case Elements
System Description

- Tool centers around system description
- Saved on central admin server
- Complete system information includes:
  - Packages
  - Changed managed files
  - Unmanaged files
  - Services
Design Concepts

- Command-line tool
- No client software installation necessary
- Access client machines via ssh from central admin server
Offline Systems Management
What Machinery is Not

• Machinery is not …
  - … a configuration management system
  - … a monitoring tool
  - … a replacement for YaST®
  - … a replacement for SUSE® Manager
Other tools

- **Cooperation** – different tools fulfill different needs
- Ansible, cfengine, chef, puppet, other CM
  - Automatic configuration of many machines
  - But how to install the system initially?
  - How to validate that your “scripts” (playbooks, recipes, manifests, etc) do the right thing?
- **SUSE Manager**
  - WebUI
  - Might use machinery for some tasks
- **AIDE**
  - Machinery is not a sophisticated security tool but can help with some tasks
Machinery's Philosophy

• Made for the system administrator of the data center
• Universal system description
• Integrate, not duplicate
• Open toolbox
• Agile development
• Technical excellence
• Open Source
How to get Machinery
Machinery in SLES®

- Part of SLES 12 mission: Best managed Linux
- Advanced Systems Management Module
- More rapidly developed life cycle
- Frequent releases driven by customer needs
- Provide building blocks
Advanced Systems Management Module

Available Extensions and Modules

- [ ] SUSE Linux Enterprise High Availability Extension
- [x] Advanced Systems Management Module
- [ ] Web and Scripting Module
- [ ] Public Cloud Module
- [ ] SUSE Linux Enterprise Desktop Extension
- [ ] SUSE Linux Enterprise Software Development Kit
- [ ] Legacy Module

Details

This Module gives you a sneak-peek into our upcoming systems management toolbox which allows you to inspect systems remotely, store their system description and create new systems to deploy them in datacenters and clouds. The toolbox is still in active development and will get regular updates. We welcome feedback!
SUSE Linux Enterprise 12

Modules

- Components of SUSE Linux Enterprise
  - Flexible lifecycle (different from the base product)
  - Delivered on-line
  - Fully supported
  - Included in the SUSE Linux Enterprise Server subscription → no extra cost

- Introduced with SUSE Linux Enterprise 12
# SUSE Linux Enterprise 12

## Modules – a closer look

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Content</th>
<th>Lifecycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web and Scripting Module</td>
<td>“PHP”, “Python”, “Ruby on Rails”</td>
<td>3 years</td>
</tr>
<tr>
<td>Legacy Module</td>
<td>Sendmail, old IMAP stack, old Java etc.</td>
<td>3 years</td>
</tr>
<tr>
<td>Public Cloud Module</td>
<td>Public cloud initialization code and tools</td>
<td>Continuous Integration</td>
</tr>
<tr>
<td>Toolchain Module</td>
<td>GCC</td>
<td>Yearly delivery</td>
</tr>
<tr>
<td>Advanced Systems Management Module</td>
<td>The configuration management tools cfengine, puppet and the new &quot;machinery&quot; tool</td>
<td>Continuous Integration</td>
</tr>
</tbody>
</table>
Machinery as Open Source Project

A systems management toolkit for Linux: http://machinery-project.org

- 292 commits
- 41 branches
- 3 releases
- 6 contributors

Merge pull request #162 from SUSE/make_user_schema_less_strict

- Move Machinery to public repository
- Document format versioning policy
- Renamed clone command to copy
- Filter unavailable packages during build
- Move Machinery to public repository
- Add method to check if a string only consist numbers
- Make build matrix description more clear
- Move Machinery to public repository
- Adapt schema and code to allow NIS placeholder in passwd
- Add "bundle check && sudo bundle install" into prophet.rb
- Implement JSON Schema validation of system descriptions
- Adapt schema and code to allow NIS placeholder in passwd
- Allow HTTPS URLs for Jenkins checks

You can clone with HTTPS or GitLab.
Machinery

A systems management toolkit for Linux.

Machinery supports configuration discovery, system validation, and service migration.

Machinery is based on the idea of an universal system description. It is transparent, extensible, and crafted beautifully.

Machinery is made for the system administrator of the data center. Read more about the philosophy behind it.

Scroll for more information
Plan

• Just released version 1.0 (October 2014)
• Frequent releases driven by customer needs

• System descriptions as documentation
• System descriptions as templates
• Migration of services from SLES 11 to SLES 12
• Support further OSes for inspection
• Support all SLE 12 architectures
Demo
Demo
Happy Alfred?
Contact

- Homepage: http://machinery-project.org

- Source Code: http://github.com/SUSE/machinery

- Mailing List: mailto:machinery@lists.suse.com
How Will You Use Machinery?

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Demo – Backup Slides
cs@endurance:~> machinery help

NAME
    machinery - A systems management toolkit for Linux

SYNOPSIS
    machinery [global options] command [command options] [arguments...]

VERSION
    0.19.1

GLOBAL OPTIONS
    --version - Show version
    --debug   - Enable debug mode
    --help, -h - Show help

COMMANDS
    help   - Shows a list of commands or help for one command
    analyze - Analyze system description
    build   - Build image from system description
    compare - Compare system descriptions
    copy    - Copy system description
    deploy  - Deploy image to OpenStack cloud
    export-kiwi - Export system description as KIWI image description
    inspect - Inspect running system
    list    - List system descriptions
    remove  - Remove system description
    show    - Show system description

cs@endurance:~>
cs@endurance:~> ssh-copy-id root@10.122.166.77
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 2 key(s) remain to be installed -- if you are prompted now it is to install the new keys
Password:

Number of key(s) added: 2

Now try logging into the machine, with: "ssh 'root@10.122.166.77'"
and check to make sure that only the key(s) you wanted were added.

cs@endurance:~> ssh root@10.122.166.77
host-44-0-0-108:~ #
machinery inspect 10.122.166.77
Inspecting 10.122.166.77 for unmanaged-files, services, os, groups, patterns, users, repositories, changed-managed-files, packages, config-files...
Inspecting unmanaged-files...
  -> Found 1236 unmanaged files and trees.
Inspecting services...
  -> Found 136 services.
Inspecting os...
  -> Found operating system "SUSE Linux Enterprise Server 12" version "12 Beta 9".
Inspecting groups...
  -> Found 40 groups.
Inspecting patterns...
  -> Found 1 patterns.
Inspecting users...
  -> Found 19 users.
Inspecting repositories...
  -> Found 1 repositories.
Inspecting changed-managed-files...
  -> Found 3 changed files.
Inspecting packages...
  -> Found 301 packages.
Inspecting config-files...
  -> Found 4 changed configuration files.

cs@endurance:~> machinery show 10.122.166.77 --scope=os,patterns,services --no-pager

# Operating system [10.122.166.77] (2014-08-27 18:52:19)

Name: SUSE Linux Enterprise Server 12
Version: 12 Beta 9
Architecture: x86_64

# Patterns [10.122.166.77] (2014-08-27 18:52:19)

* Minimal

# Services [10.122.166.77] (2014-08-27 18:52:19)

* YaST2-Firstboot.service: enabled
* YaST2-Second-Stage.service: enabled
* after-local.service: static
* apache2.service: enabled
* auditd.service: disabled
* autyast-initscripts.service: disabled
* blk-availability.service: disabled
* cgroup.service: masked
* cleanup.service: static
* clock.service: masked
* console-getty.service: disabled
* console-shell.service: static
* cron.service: enabled
* crypto-early.service: masked
* crypto.service: masked
cs@endurance:~> machinery inspect 10.122.166.77 --name=10.122.166.77-new --scope=packages
Inspecting 10.122.166.77 for packages...
Inspecting packages...
-> Found 300 packages.
cs@endurance:~> machinery list
10.122.166.77:
  * changed-managed-files
  * config-files
  * groups
  * os
  * packages
  * patterns
  * repositories
  * services
  * unmanaged-files
  * users

10.122.166.77-new:
  * packages

cs@endurance:~> machinery compare 10.122.166.77 10.122.166.77-new --scope=packages --no-pager
# Packages

Only in '10.122.166.77':
  * vim-7.4.283-1.29.x86_64 (SUSE LLC <https://www.suse.com/>)

cs@endurance:~>