Intro to Alchemy: Convert Existing Workloads to Gold-Master Images

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Agenda

What is Machinery?

What is KIWI?

What problem is solved?

Common Use Case(s)

Hands On

Inspect System with Machinery

Overview of Machinery Data

Machinery export to html

Machinery Export to KIWI

Build new image with KIWI

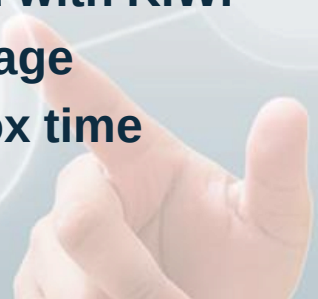
Run image

Modify image data

Rebuild with KIWI

Run image

Sandbox time



Converting Workloads

Move a system from platform to platform (physical or virtual)

Move a system to the cloud

Define a base system that’s repeatable

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Machinery – Will inspect a system creating a system description

KIWI – Tool used to build a system image

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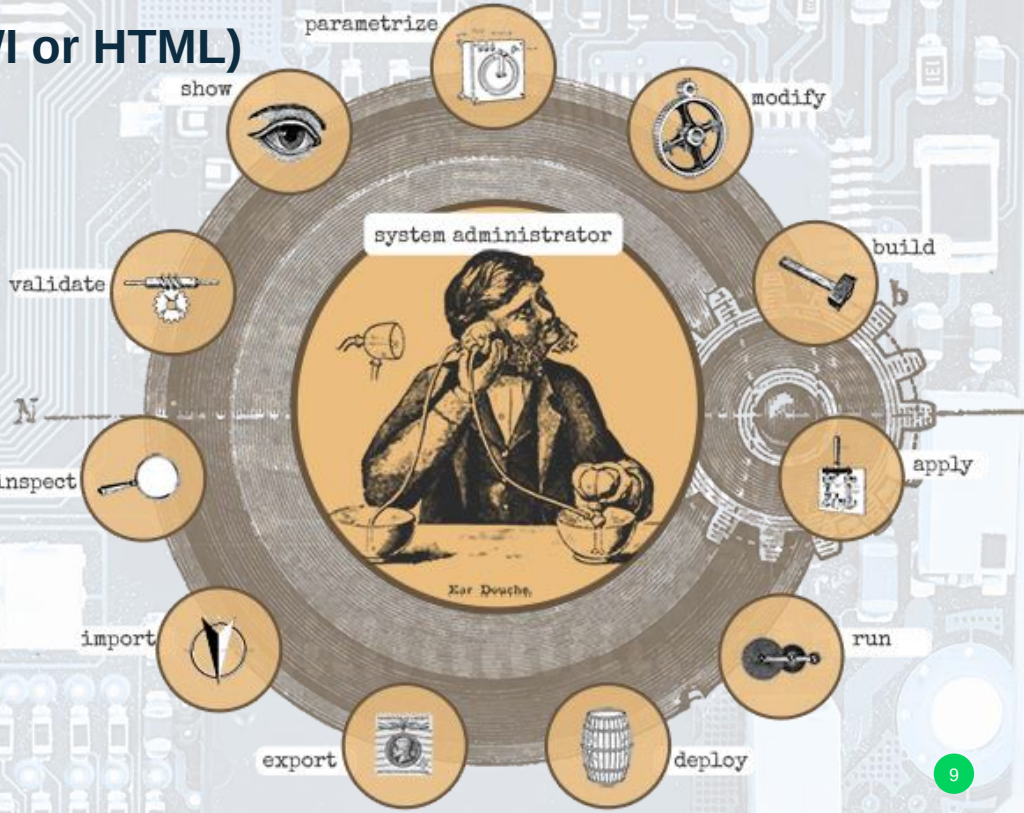
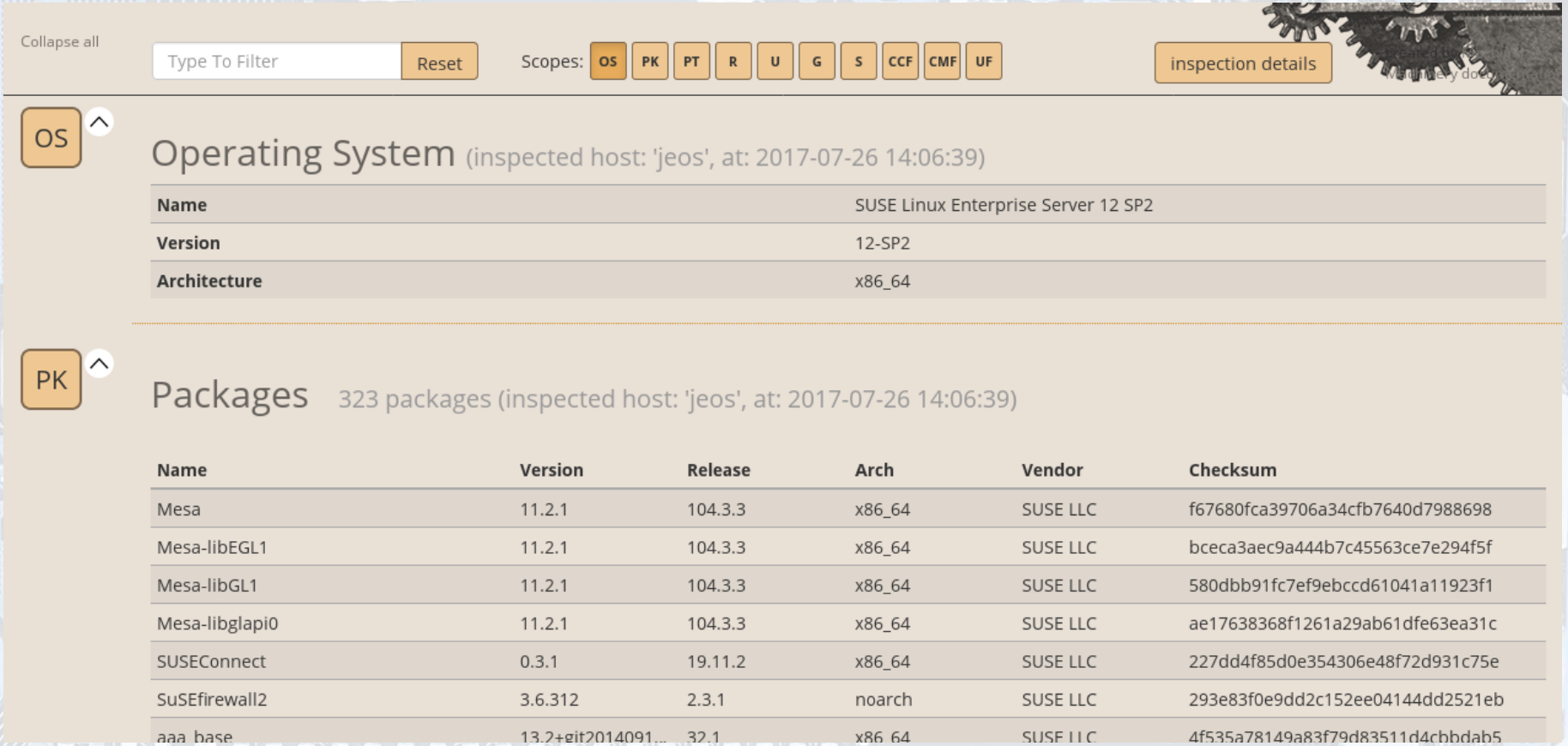
- **Uses ssh key for accessing inspected systems**

Machinery Use Case

- **Creating system description**
- **Export inspection data (ie: KIWI or HTML)**
- **Compare system descriptions**
  - Same system different time
  - Different systems
    - Example – Several web servers are supposed to be the same but one isn't acting correctly
- **Physical to Cloud**
- **Migrate SLE 11 to SLE 12**



Machinery html output example



Machinery compare example

```
srv:~ # machinery inspect jeos

srv:~ # machinery copy jeos jeos.orig

Install apache on jeos

Create index.html on jeos

srv:~ # machinery inspect jeos

srv:~ # machinery compare jeos.orig jeos
```

```
# Packages
Only in 'jeos':
  * apache2,   * apache2-prefork
  * apache2-utils,   * libapr-util1
  * libapr1,   * liblua5_2
  * libnghttp2-14
# Services
Only in 'jeos':
  * apache2.service: disabled
  * apache2@.service: disabled
# Unmanaged Files
Only in 'jeos':
 * /etc/sysconfig/apache2 (file)
  * /srv/www/htdocs/index.html (file)
  * /usr/sbin/httpd (link)
  * /var/lib/systemd/migrated/apache2
(file)
```

What is KIWI?

- **Tool for building Linux system images**
  - SUSE Studio uses it as back-end
  - openSUSE Build Service
  - SUSE Products are built with KIWI
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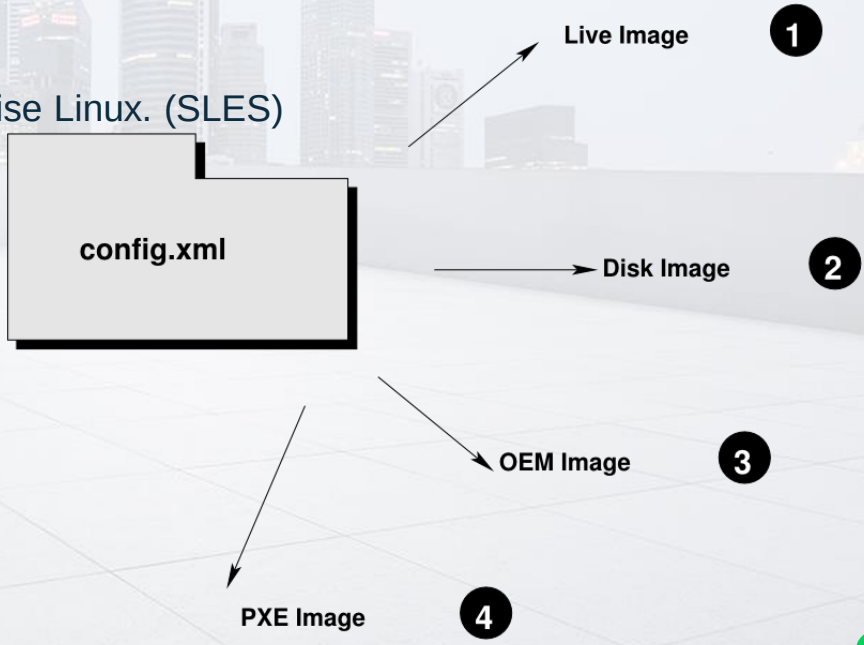

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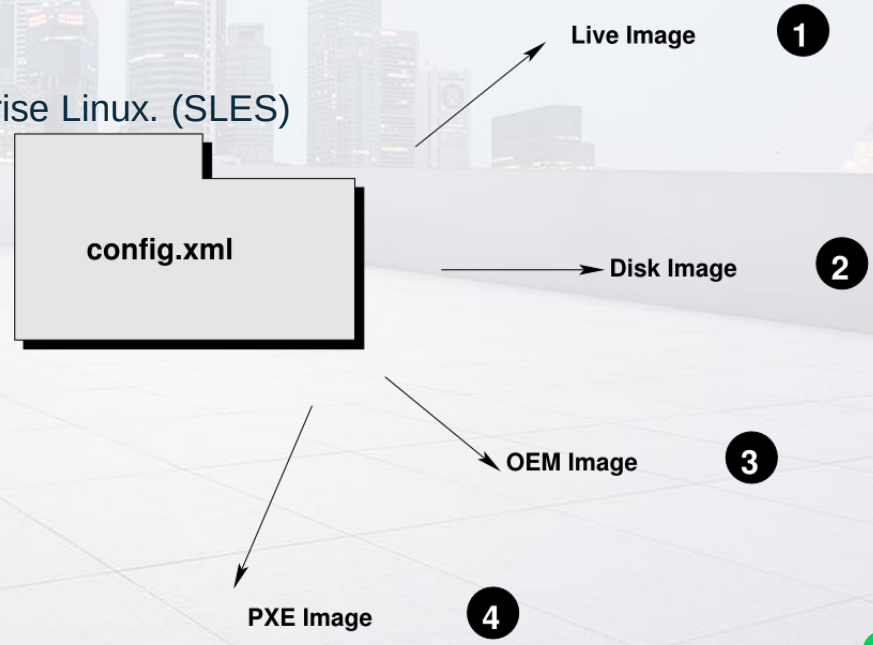
ISO	Live CD/DVD
PXEBoot	Hard Disk
USB	Amazon EC2 (.ami)
Docker	Google Cloud Format (..gce)
VMware (.vmdk)	XEN
Vagrant (.vagrant)	
VirtualBox (.vdi)	
Virtual Hard Disk (.vhd)	
KVM/Qemu (.qcow2)	
Open Virtualization Format (.ovf, .ova)	



KIWI Process

KIWI process is divided into two stages

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- **Preparation:**
  - Create a root file system defined by configuration file.
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  - Results in unpacked root tree
- **Creation:**
  - desired image is created from the directory structure

  - https://doc.opensuse.org/projects/kiwi/doc/

Lab Environment

Two Virtual Machines

sca – “Admin” machine you will do all work from.

Login as Geeko/linux

sc1 – This is the system we are going to inspect with Machinery

Lab – What are we going to do?

- Use machinery to inspect a VM.
- Explore the Universal System Description
- Export the description to KIWI
- Use KIWI to replicate original system and run a new VM
- Modify KIWI configuration, re-build and run
- Use machinery to compare configurations

Lab

1. Open Intro-to-Alchemy-LAB.pdf
2. Text with grey background represents commands to type
3. You will be logged in as root!
4. Passwords = “linux”

Questions ??

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