



OpenStack@LAL Appliances *v0.3*

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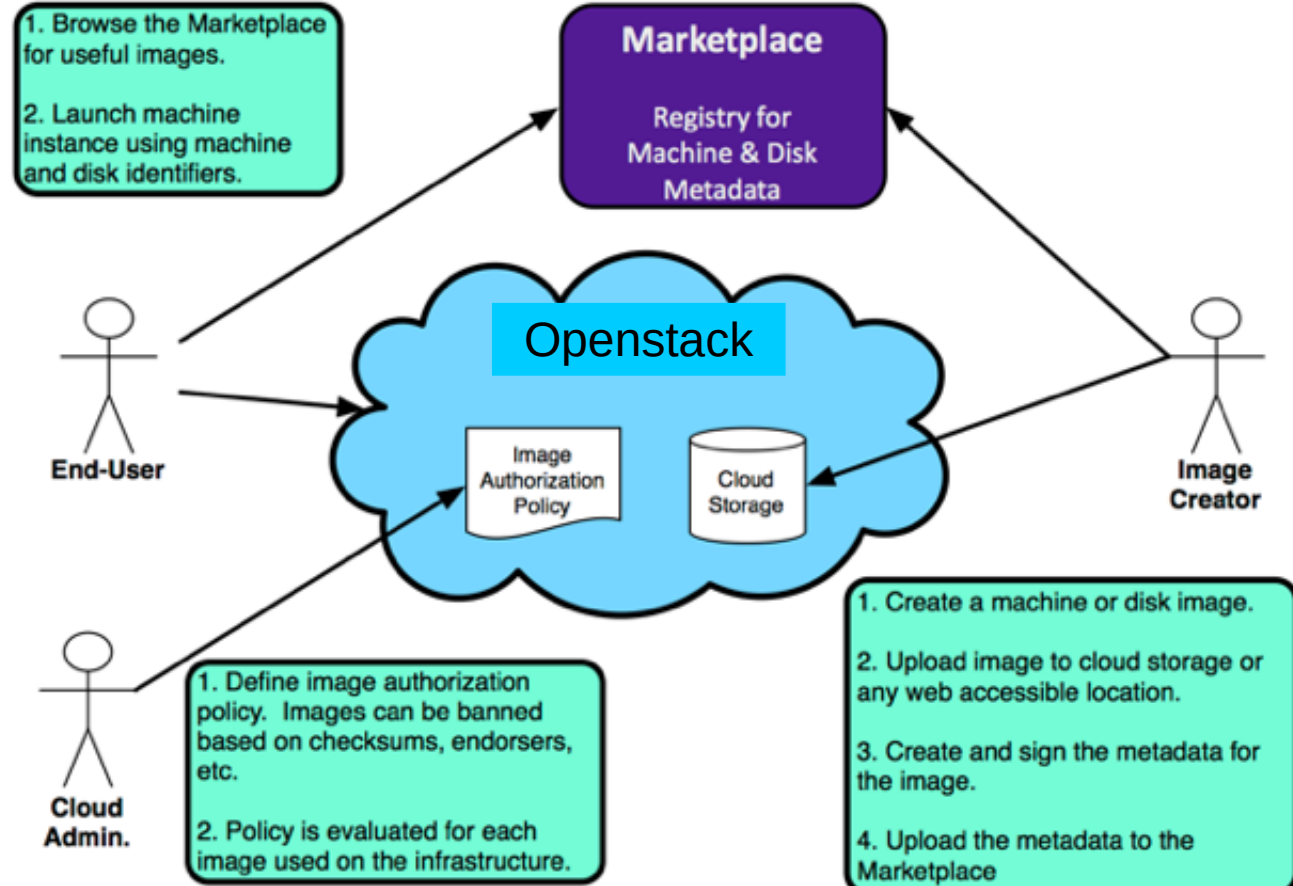
Complete Dynamic Multi-cloud Application Management

- **Definition**
 - A generic disk image with an OS and eventually some packages
- **Goal**
 - An application stack easily deployable over a cloud
- **Benefits**
 - Propose an easy way to use cloud resources
 - Standardize cloud usage
- **Requirements**
 - Disk image must be supported by targeted cloud
 - Contextualization

Appliance lifecycle

- **Appliance lifecycle steps**

- Creation
- Storage
- Transport
- Authorization



- **Several image formats**
 - RAW
 - FVD
 - QCow2
 - VirtualBox VDI
 - VMWare VMDK
 - Microsoft VHD
 - Ovf (standard)
 - ...

- **Requirements**

- The appliance must contain contextualization tools
- Cloud infrastructure may propose contextualization services

- **Goals**

- Customizing virtual machine
 - Network params
 - Ssh access
 - Start services etc.

- **Technics**

- Cloud-init (<https://help.ubuntu.com/community/CloudInit>)
- Hepix (<http://grid.desy.de/vm/hepix/vwg/doc/html/start/contextualisation-principles.shtml>)

- **Appliances can be created**

- From scratch

- Hardest: should be avoided

- From a factory

- Out of the box; one can customize provided appliance

- <http://www.bitnami.org>

- From an existing OS

- Allow incremental generations

- <http://manpages.ubuntu.com/manpages/lucid/en/man1/vmbuilder.1.html>

- <https://fedoraproject.org/wiki/Features/ApplianceTools>

- <https://github.com/jedi4ever/veewee>

- **Good practices**
 - Remove all specificities
 - stop unneeded services
 - Include contextualization tools

Service/ package	Recommandations
Firewall	deactivated
SSH security	Allow electronic keys only
Boot protocol	DHCP
Contextualization	Cloud-init, Hepix
udev	<code>rm -f /lib/udev/rules.d/*net-gen*</code> <code>rm -f /etc/udev/rules.d/*net.rules</code>
selinux	deactivated
swap	Include swap disk in fstab
acpid	Needed for volume hot plug
Hostname	Clean hostname installation reference

- **Goals**
 - A public store
 - An appliance sharing system
 - An easy way to retrieve appliances

- Stores appliances metadata, including location
 - ➔ Does not store appliances themselves
- Publishes appliances metadata

- A Web service
- A REST interface

https://marketplace.stratuslab.eu/marketplace/metadata

Metadata

Show 10 entries

Search...

SlipStream-02586f06-4685-4ace-8ffa-44d7559f4905

Endorser: jane.tester@example.org
Identifier: GnxeKy5Ot1bifkZv0dxdNRt1PI
Created: 2015-03-24T23:38:54Z
Kind: machine

[More...](#)

SlipStream-a05b1986-015c-43d9-9ea1-000bbbbde75f

Endorser: jane.tester@example.org
Identifier: DSDLe1f_w1FBjNdyrglV128Jsxv
Created: 2015-03-24T22:31:44Z
Kind: machine

[More...](#)

SlipStream-556a6b72-15c8-4911-8dc4-5d530aff9600

Endorser: jane.tester@example.org
Identifier: LKFNW5u6OZI7I1J-9uyvo2TTRbQ
Created: 2015-03-24T18:09:29Z
Kind: machine

[More...](#)

Status: valid
Location: all
Filter:
Search os
Search version
Search arch
Search endorser
search kind
Sort by:

Search Criteria

Appliance Summary

Appliance details

Endorsed by jane.tester@example.org at 2015-03-24T23:38:54Z

Identifier	GnxerKy5Ot1bifkZv0dxdNRt1PI
Type	base
Kind	machine
Format	raw
OS	CentOS v6.6 x86_64
Version	1.2.30
Created	2015-03-24T23:38:54Z
Valid	2015-09-22T23:38:54Z
Hypervisor	kvm
Publisher	StratusLab
Bytes	32212254720
Checksum	MD5 3dee82c0eeb0167c922357fb69de9796
	SHA-1 69f17ab2b2e4eb756e27e466fd1dc5d351b753e5
	SHA-256 b02cf883451c54e61bc65b00241977b2dffcdafb 28bb01bafd76188ee3ca7a4b
	SHA-512 151f8d3cb9581ae1abdb00b71706aab170e889 9fb177de337d22fc2aed60a1364a7dd5b249a5b db3b85c6bfbad2e97232308c96688a4058c24dbe 66eb2572
	Location pdisk:10.216.64.9:8445:19f4ea26-09b7-42e3-a7ce-b6da85365fec

[xml](#)[json](#)

- **Goal**
 - The appliance must be transferred to the cloud infrastructure
- **Transparency**
 - Stratuslab transports appliances transparently
- **Integrity**
 - Appliance integrity is checked
- **Cache**
 - Transported once
 - Locally stored in a persistent disk

- **Users**
 - Find and use existing appliances
- **Creators**
 - Publish appliances
- **Administrators**
 - Verify appliances

- Software stack:
 - Python 2.6+
 - Pip (Python installer)
 - Java 1.6+ (not GNU)
 - SSH client & **key**
 - Recent web browser
- Optionally
 - Virtualenv (Python virtual environnement)

- Global installation:

- `$ pip install -pre stratuslab-client`
=> Check installed version : 14.06

- Single user installation

- `$ pip install -pre stratuslab-client --user`
→ Insert `$STRATUSLAB_HOME/bin` in your `$PATH`

- A tool is provided to create your own config file
 - `$ stratus-copy-config`
 - => The result file is `$HOME/.stratuslab/stratuslab-user.cfg`
- Customize your config file
 - Copy your user name and password
 - **ATTENTION**
 - The special character “%” must be doubled (e.g password)

LAL cloud

```
endpoint = https://cloud.lal.stratuslab.eu/one-proxy/xmlrpc
pdisk_endpoint = https://pdisk.lal.stratuslab.eu/pdisk
marketplace_endpoint = https://marketplace.stratuslab.eu/marketplace
```


Example: CERNVM

```
$> stratus-build-metadata \  
  --author="John Doe" --os=SL --os-version=6.6 --os-arch=x86_64 \  
  --image-version=1.0 \  
  --comment="cernvm 3.5.1 (http://cernvm.cern.ch)" \  
  --format=raw \  
  --hypervisor=kvm \  
  --title=cernvm3.5.1 \  
  --location=http://cernvm.cern.ch/releases/production/cernvm-3.5.1.hdd \  
  cernvm-3.5.1.hdd
```

This creates `SL-6.6-x86_64-base-1.0.xml` description file.

You can modify `SL-6.6-x86_64-base-1.0.xml` and insert as many location as you want

E.G.

If you have inserted the image at LAL cloud, you can insert a link to permit instance launch in one click:

```
<slterms:location>https://keystone.lal.in2p3.fr/dashboard/project/instances/launch?source_id=f3c8a9d8-624f-4676-aef0-b3980a190650&source_type=image_id</location>
```

```
$> stratus-sign-metadata SL-6.6-x86_64-base-1.0.xml
```

```
$> stratus-upload-metadata SL-6.6-x86_64-base-1.0.xml
```

- **Marketplace** : <https://marketplace.stratuslab.eu>
- **Documentation** : <https://openstack.lal.in2p3.fr>
- **Dashboard** : <https://keystone.lal.in2p3.fr>