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Image Creation Service Installation Guide

Activity 2: Service Construction

WP 2.1: IDE, programming model and runtime design and implementation

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Dissemination Level

PU	Public	X
PP	Restricted to other programme participants (including the Commission)	
RE	Restricted to a group specified by the consortium (including the Commission)	
CO	Confidential, only for members of the consortium (including the Commission)	



Version History

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1 Introduction

This document includes the installation guide for the Image Creation Service (ICS) software component.

1.1 Glossary of Acronyms

Table 1 -Acronyms table

Acronym	Definition
D	Deliverable
WP	Work Package
ICS	Image Creation Service



2 Image Creation Service Installation Guide

2.1 Release information

Table 2 - Release information

Component Name	Release Number	Release Date
Image Creation Service	2.0-SNAPSHOT	2013-03-31

2.2 Platforms Supported

The ICS has been tested and run on several Linux distributions, such as Ubuntu 12.04 and Debian 6.0.4 (Squeeze).

Important: the ICS needs to be installed and run on a physical machine for better I/O performance. This is because qcow2 images are frequently created, updated and deleted.

2.3 Software Pre-requisites and Dependencies

Table 3 - Software dependencies for ICS

Software Package	Version	Licence
Apache Tomcat	>= 6.0.32	Apache License version 2.0
Apache HTTP Server	>= 2.2.16	Apache License version 2.0
Qemu	>= 0.12.5	GNU General Public License
Qemu Utilities (qemu-utils)	>= 0.12.5	GNU General Public License
Network Block Device (NBD) Client	>= 3.0	GNU General Public License

2.4 Installation Instructions

- Copy or move the ICS war file to your `$TOMCAT_DIR/webapps` folder. Note that `$TOMCAT_DIR` refers to the location of your Apache Tomcat installation.
- Create these following directories on a machine that runs `ImageCreationService.war`
 - For storing temporary files to be uploaded to the image, type:
`# install -d /opt/optimis/ImageCreationService/tmp`
 - For storing ICS properties and databases files, type:
`# install -d /opt/optimis/etc/ImageCreationService/`
 - For storing ICS log file, type:
`# install -d /opt/optimis/var/log/ImageCreationService/`

- Move the properties files stored inside the ICS war file:

```
# mv -v $TOMCAT_DIR/webapps/ImageCreationService/WEB-INF/classes/*.properties  
/opt/optimis/etc/ImageCreationService/
```
- Configure the `/opt/optimis/etc/ImageCreationService/ics.properties` file. This file is heavily commented so that you know what each setting does.
- Create qcow2 images for base images and stored them on `/opt/optimis/ImageCreationService/`
Instructions on how to create qcow2 images can be found on the next section.
- Create a new file `image_template.csv` (if it does not exist). This template file lists all the available base images to be used by the ICS.

```
# vim /opt/optimis/ImageCreationService/image_template.csv
```
- Inside `image_template.csv`, the structure looks like the following. Note that "#" denotes a comment and it is being ignored by the ICS when reading this file.

```
# image id = starts from 1 ... n (integer)  
# image file = name of image stored in the same directory as this csv file (in qcow2 format  
only)  
# tomcat's webapps directory = the location of tomcat webapps inside the image  
#  
# List the base images one by one:  
# image id, image filename, OS, OS_version, img_size (GB), architecture, Tomcat's webapps  
directory  
1, centos_10g_i386.qcow2, CentOS, 6.3, 10, i386, /var/lib/tomcat6/webapps  
2, centos_15g_x86_64.qcow2, CentOS, 6.3, 15, x86_64, /var/lib/tomcat6/webapps  
3, ubuntu_05g_i386.qcow2, Ubuntu, 12.04, 5, i386, /var/lib/tomcat6/webapps  
4, ubuntu_10g_x86_64.qcow2, Ubuntu, 12.04, 10, x86_64, /var/lib/tomcat6/webapps
```

Table 4 Example of `image_template.csv` for listing base images.

- If tomcat runs as a tomcat user (not root), then change the directory ownership. Otherwise, tomcat won't be able to write into a log file and clone images.

```
# chown -hR tomcat6:tomcat6 /opt/optimis/
```

-- Creating Base Images ---

* To create an image with qcow2 format:

```
# qemu-img create -f qcow2 ubuntu_5GB.qcow2 5G
```

* To install the newly-created image (use either qemu 32- or 64-bit command):

```
# qemu-system-i386 -m 1024 -boot d -enable-kvm -hda ubuntu_5GB.qcow2 -cdrom ubuntu-12.04.1-server-i386.iso
```

-- OR --

```
# qemu-system-x86_64 -m 1024 -boot d -enable-kvm -hda ubuntu_5GB.qcow2 -cdrom ubuntu-12.04.1-server-amd64.iso
```

* when creating a CentOS image:

- select manual partition not automatic otherwise qemu-nbd will only mount the grub / boot partition.

- create 2 partitions: / (ext4) and swap (1GB).

Make sure that the / partition is the primary one at the beginning and swap for the remaining one.

- if the CentOS image has no network connection, check the *ifcfg-eth0* file.

The */etc/sysconfig/network-scripts/ifcfg-eth0* file should contain the following lines:

```
DEVICE=eth0
```

```
BOOTPROTO=dhcp
```

```
ONBOOT=yes
```

Then perform:

```
# /etc/init.d/network restart
```

* when creating an Ubuntu Server image:

- select a manual partition

- create 2 primary partitions: / (ext4) with 0% reserve block and swap (1GB)

Make sure that the / partition is the primary one at the beginning and swap for the remaining one.

- select OpenSSH and Tomcat Java servers

- To enable the root account: `$ sudo passwd root`

- To disable root account: `$ sudo passwd -l root`

* To run the qcow2 image:



```
# qemu-system-i386 -m 1024 -net nic,model=e1000 -net user -enable-kvm -hda ubuntu_5G.qcow2 &
```

-- OR --

```
# qemu-system-x86_64 -m 1024 -net nic,model=e1000 -net user -enable-kvm -hda ubuntu_5G.qcow2 &
```

* Once the image is running, upload the below script and run it to install packages:

```
# ./scripts/base_image/configuration/centos.sh -- for CentOS 6.3 image
```

```
# ./scripts/base_image/configuration/ubuntu/ubuntu.sh -- for Ubuntu Server 12.04 image
```

NOTE: For the Ubuntu image, also upload configuration (*.conf) files into the image

To change the root password in the CentOS image:

```
# echo root_pwd > blah.txt (change the "root_pwd" !!)
```

```
# cat blah.txt | passwd --stdin root
```

To change the root password in the Ubuntu image:

```
# echo "root:root_pwd" > blah.txt (change the "root_pwd" !!)
```

```
# echo "optimis:optimis_pwd" >> blah.txt (change the "optimis_pwd" !!)
```

```
# chpasswd < blah.txt
```

* After the base image has been successfully configured, run the below script to compress the qcow2 image.

NOTE: Required packages are **zerofree qemu-utils nbd-client**

```
# sudo ./scripts/base_image/compress_qcow2_images.sh [directory]
```

-- Uninstallation of the ICS ---

- Log on as root to the server where the ICS runs.
- Unzip and run the attached shell script. It will delete the whole directories and war file related to the ICS.



cleanup_ics.tar.gz

2.5 Getting started

2.5.1 Using the Software

The ImageCreationServiceRESTClient package provides a client that can be used by every component. It is self explanatory. There is API documentation for the client if in doubt.

Alternatively, automated scripts have been created. Usage:

```
./scripts/test_ics.sh [IP_address]
```

```
./scripts/test_image_requirement.sh [IP_address]
```

Note that [IP_address] means optional. If this parameter is not given, ICS will run in a localhost.

2.5.2 Configuration

Configuration can be done via the properties file located in /opt/optimis/etc/ImageCreationService/ics.properties file.

This file is heavily commented so that you know what each setting does.

2.6 FAQ

No FAQ entries at the moment.