

Getting Started with ICM 4.2 on z Systems

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ICM Session Agenda

- ❑ IBM Cloud Manager and OpenStack
- ❑ Architecture on z Systems
- ❑ Installation and Customization
 - ❑ DMSSICNF and DMSSICMO
 - ❑ Appliance
- ❑ Virtual Server Requirements
- ❑ Virtual Server Image Capture
- ❑ Virtual Server Deployment
- ❑ SMTP Notifications
- ❑ LDAP Authentication
- ❑ Cinder

- ❑ Chef Server, Client, Recipes
- ❑ Resources and References

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IBM Cloud Manager and OpenStack

- IBM Cloud Manager 4.2 is the current release on z Systems
- Is uniquely delivered as an appliance on z. No concerns about which distribution, level, or mix of “other” software used.
- Can manage ICM on other platforms from z Systems
- Conversely System z ICM could be managed from ICM on other platforms
- ICM – IBM Cloud Manager (previously CMO)
- Today is the only IBM Cloud tooling supporting z/VM Single System Image and Live Guest Relocation
- Today is the only IBM Cloud tooling supported in a “Manage from z” mode
- Fee for S&S

IBM Cloud Manager and OpenStack

What is OpenStack?

- A set of software tools for Cloud Computing
 - Manages process, network and storage resources (and more)
 - Began as a joint venture between NASA and Rackspace
 - More than 200 companies are now part of the project
 - Has a Web UI, command line, and rest-API interface
 - Key components have code names: Nova (compute), Neutron (network), Glance (Images), Block Storage (cinder) and more...
 - For more <https://www.openstack.org/>
-
- Currently only V7000 SCSI LUNs are supported with Cinder on z. (ECKD and SCSI via EDEV support is without Cinder driver)
 - Juno is the current OpenStack level System z and ICM 4.2 are using

IBM Cloud Manager and Openstack

Some OpenStack Terminology

- **Flavor** – Virtual hardware template where defined resource sizes are specified for: Processors, memory, disk (ephemeral virtual root disk), ephemeral disk, swap, and other specifications. It has a name and an ID number
- **Persistent disk** – Potentially lives beyond the life of any one server because it is independent of any one server. Can be attached to different servers, but not at the same time.. It is composed of two types: Object or Block. LVM support is in the block storage space, but may not be all block storage
- **Ephemeral disk** – Associated with a virtual server and does not live beyond the life of that server.
- **Root/boot disk** – Ephemeral disk that the captured Linux image is copied in to. Typically allocated on a GB boundary. Size 0, means exact same size/cylinders as the source volume.

ICM – How resources are provisioned

- **Disks**
 - GB quantity via flavor definition
 - ECKD – Allocated via a DIRMAINT extent control group
 - SCSI – Raw luns allocated via Cinder driver. Currently only V7000 storage is supported. EDEVs allocated via DIRMAINT not Cinder.
- **Network Interfaces** – Via neutron network definitions you make. These will point to a vswitch you have defined and possibly VLAN information. You can have more than one
- **IP address** – From the range(s) you define in the neutron network definitions
- **Virtual CPs** – Via the flavor definitions you define and select
- **Virtual Memory** – Via the flavor definitions you define and select

- ICM has no direct integration with RACF, you need to enable the RACF DIRMAINT interfaces and it is recommended to user exit DVHXUN to tailor the operation.

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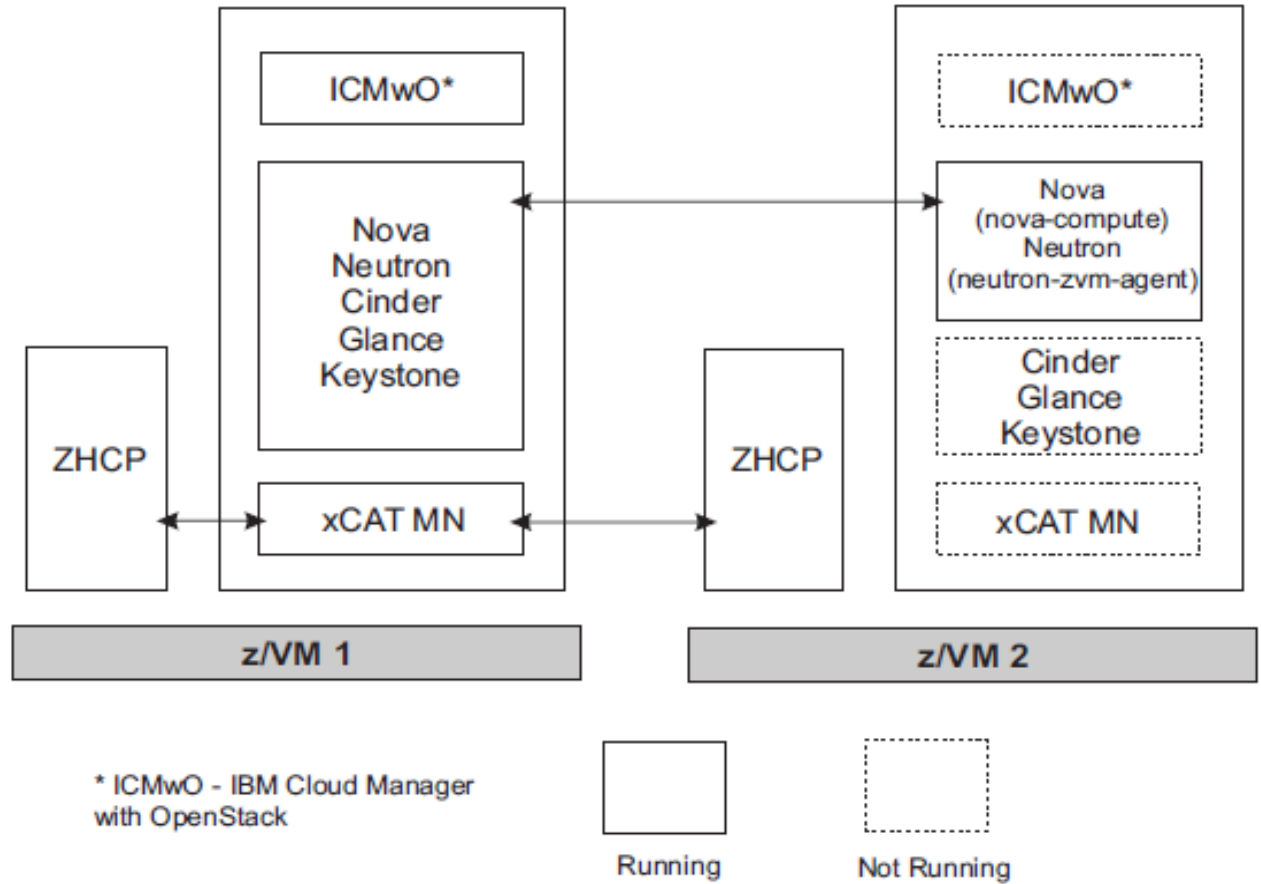
- ❑ Chef Server, Client, Recipes
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ICM Architecture on z Systems

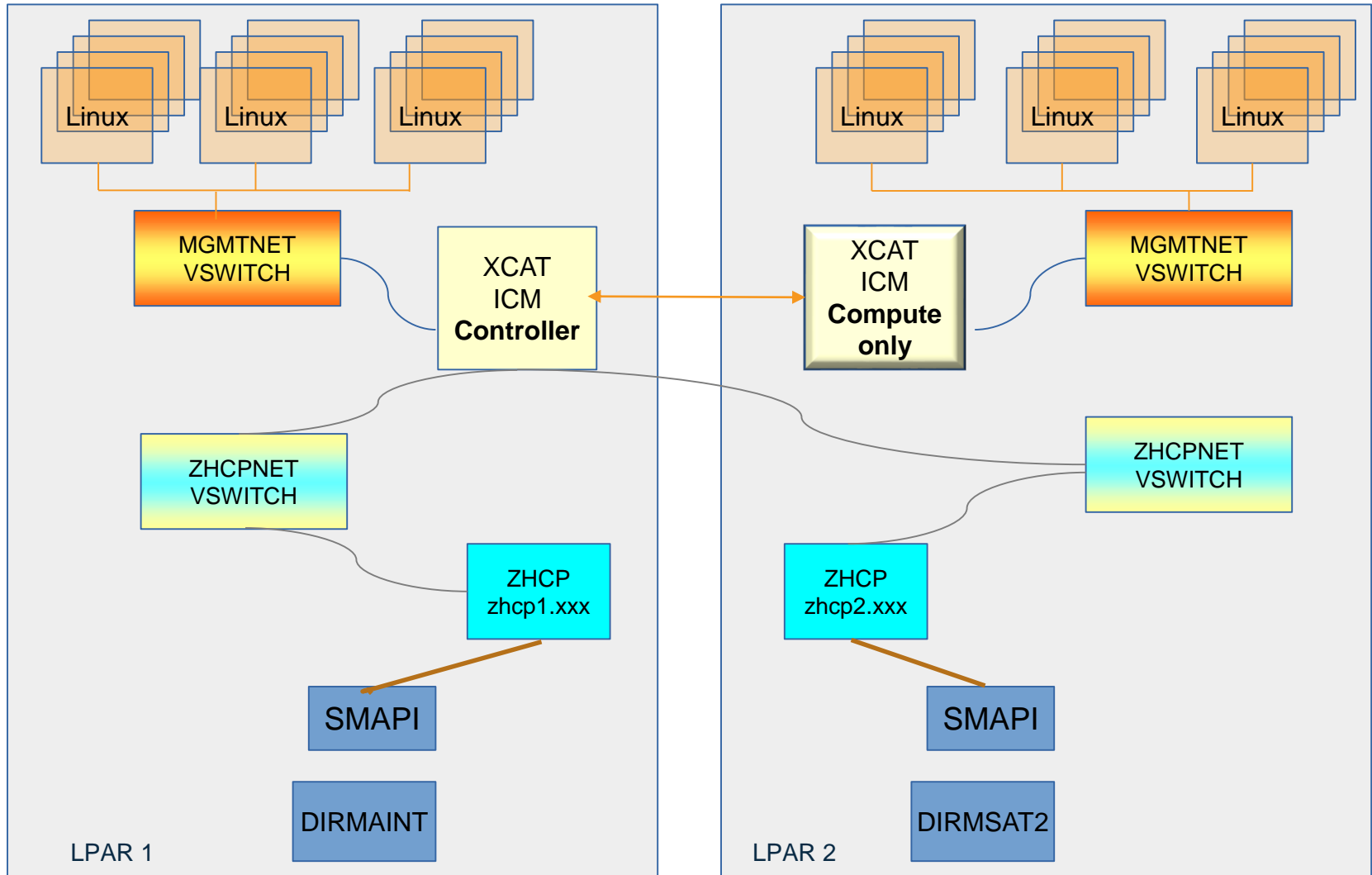
- ICM has the concept of a Controller node and one or more compute only nodes.
- The ICM controller can talk to the compute nodes directly
- ICM controller sends request to xCAT which forwards to zHCP, SMAPI and DIRMAINT
- ICM compute only nodes do NOT talk to zHCP or SMAPI directly
- For xCAT to zHCP connectivity, an OSA-less vswitch may be used in single LPAR configurations, but with multiple LPARs or CECs this is NOT possible.
- ICM support multiple networks, virtual switches, VLANs (or networks without VLAN tagging), and subnets.
- ICM does not directly interact with z/VM RACF
- All ICM deployed virtual servers live in guest with a user-definable guest name prefix
- Has a default set of XCATVS* virtual switches, but names can be changed
- Advanced configurations could be “multi-region”. Multi-region architectures are separate deployments with a common keystone server (authentication) and could include different hypervisors or different platforms managed thru a single UI

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

ICM Architecture on z Systems



ICM example in 2 way SSI



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ICM Installation- Requirements and Planning

Requirements

- z/VM 6.3 + PTFs
 - See <http://www.vm.ibm.com/sysman/xcmntlvl.html> (xCAT related maintenance) and <http://www.vm.ibm.com/sysman/osmntlvl.html> (OpenStack related maintenance)
- A few disks
 - Two model 3 volumes of capacity in MAINT630
 - One 3390 model 3 of capacity for EACH XCAT for system root disk purposes
 - Additional capacity for the ICM LVM (recommend at least ~ 40GB to start)
 - These are in addition to the base xCAT and ZHCP requirements
- Network connectivity and IP addresses
 - At least two virtual switches
 - Two or three IP address per z/VM instance (different subnets)
- Supporting Infrastructure
 - DIRMAINT (or equivalent)
 - SMAPI

ICM Installation – Requirements and Planning

Requirements continued

- ICM 4.2 code from Fix Central
 - Copied two MAINT630 disks and then restored to XCAT 101 disk
 - Later remaining component copied to running appliance

- cloud-init and supporting software on “prepared” Linux image per “Enabling z/VM for Openstack Guide (Juno Release Level)” before capturing the virtual server
- Note: cloud-init is retrieved from the internet

ICM Installation – General Steps

- ❑ Follow initial instructions in CMOINFO / CMA42 file (MAINT 400 disk)
 - ❑ Define new minidisk on MAINT630 and XCAT
 - ❑ Install ICM 4.2 code on MAINT630 Minidisks
 - ❑ Upload the compressed code to MAINT630 Minidisk
 - ❑ Decompress the code to the other minidisk
 - ❑ DDR restore the code to the XCAT 101 minidisk

- ❑ Customize the DMSSICNF and DMSSICMO via VMSES localmod process
- ❑ ALL CMO LVM disks must be CP formatted from beginning to end
- ❑ Start the appliance
- ❑ Validate the appliance
- ❑ Once the appliance is running complete the upload the cmwo420_cma_install.tar and complete the install of it. This only need to be done on the controller node.
- ❑ Complete customization of the ICM appliance
- ❑ Install and customize the controller first, then add each compute only node from the other SSI members

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VMSES Local Modification Example – DMSSICNF #1

```

/*****/
/* XCAT server defaults */
/*****/
XCAT_User      = "XCAT"          /* xCAT z/VM user ID */
XCAT_Addr      = "172.110.111.201" /* XCAT IP Address */
XCAT_Host      = "xcat1"        /* xCAT hostname */
XCAT_Domain    = ".pdl.pok.ibm.com" /* xCAT domain name */
XCAT_vswitch   = "ZHCPNET"     /* xCAT Vswitch name */
XCAT_OSAdev    = "NONE"        /* OSA address for xCAT */
XCAT_zvmsysid  = "POKLBS1"     /* xCAT z/VM system id */
XCAT_notify    = "OPERATOR"    /* Notify when xCAT started */
XCAT_gateway   = ""            /* Network gateway IP addr. */
XCAT_netmask   = "255.255.255.0" /* Default network mask */
XCAT_vlan      = "NONE"
XCAT_iso       = ""
XCAT_MN_Addr   = "172.110.100.201" /* xCAT mgmt node IP address */
XCAT_MN_vswitch = "NET172A"     /* xCAT MN Vswitch name */
XCAT_MN_OSAdev = "NONE"        /* OSA address for xCAT MN */
XCAT_MN_gateway = "172.110.100.1" /* Network gateway IP addr. */
XCAT_MN_Mask   = "255.255.255.0" /* Netmask for xCAT MN */
XCAT_MN_vlan   = "NONE"
XCAT_MN_admin  = "mnadmin"     /* MN administrator userid */
XCAT_MN_pw     = "zlinux"     /* MN admin password
                               /* (if NOLOG, userid cannot
                               /* ssh into XCAT MN)
/*****/
/* ZHCP server defaults */
/*****/
ZHCP_User      = "ZHCP"          /* zhcp z/VM user ID */
ZHCP_Addr      = "172.110.111.211" /* zhcp IP ADDRESS */
ZHCP_Host      = "zhcp1"        /* zhcp hostname */
ZHCP_Domain    = ".pdl.pok.ibm.com" /* zhcp domain name */
ZHCP_gateway   = ""            /* Network gateway IP addr. */
ZHCP_netmask   = "255.255.255.0" /* Default network mask */
ZHCP_vswitch   = "ZHCPNET"     /* zhcp Vswitch name */
ZHCP_OSAdev    = "NONE"        /* OSA address for zhcp */
ZHCP_vlan      = "NONE"

```

- SSI member #1 and controller
- This xCAT talks to all zHCPs

VMSES Local Modification Example – DMSSICNF #2

```

/*****/
/* XCAT server defaults */
/*****/
XCAT_User      = "XCAT"           /* xCAT z/VM user ID */
XCAT_Addr      = "172.110.111.201" /* XCAT IP Address */
XCAT_Host      = "xcat2"          /* xCAT hostname */
XCAT_Domain    = ".pdl.pok.ibm.com" /* xCAT domain name */
XCAT_vswitch   = "ZHCPNET"        /* xCAT Vswitch name */
XCAT_OSAdev    = "NONE"           /* OSA address for xCAT */
XCAT_zvmssid   = "POKLBS2"        /* xCAT z/VM system id */
XCAT_notify    = "OPERATOR"       /* Notify when xCAT started */
XCAT_gateway   = ""               /* Network gateway IP addr. */
XCAT_netmask   = "255.255.255.0"   /* Default network mask */
XCAT_vlan     = "NONE"
XCAT_iso       = ""
XCAT_MN_Addr   = "172.110.100.202" /* xCAT mgmt node IP address */
XCAT_MN_vswitch = "NET172A"        /* xCAT MN Vswitch name */
XCAT_MN_OSAdev = "NONE"           /* OSA address for xCAT MN */
XCAT_MN_gateway = "172.110.100.1" /* Network gateway IP addr. */
XCAT_MN_Mask   = "255.255.255.0"   /* Netmask for xCAT MN */
XCAT_MN_vlan   = "NONE"
XCAT_MN_admin  = "mnadmin"         /* MN administrator userid */
XCAT_MN_pw     = "zlinux"          /* MN admin password
/* (if NOLOG, userid cannot
/* ssh into XCAT MN)
/*****/
/* ZHCP server defaults */
/*****/
ZHCP_User      = "ZHCP"           /* zhcp z/VM user ID */
ZHCP_Addr      = "172.110.111.212" /* zhcp IP ADDRESS */
ZHCP_Host      = "zhcp2"          /* zhcp hostname */
ZHCP_Domain    = ".pdl.pok.ibm.com" /* zhcp domain name */
ZHCP_gateway   = ""               /* Network gateway IP addr. */
ZHCP_netmask   = "255.255.255.0"   /* Default network mask */
ZHCP_vswitch   = "ZHCPNET"        /* zhcp Vswitch name */
ZHCP_OSAdev    = "NONE"           /* OSA address for zhcp */
ZHCP_vlan     = "NONE"

```

- SSI member #2 and compute only
- This xCAT talks to NO zHCPS
- It communicates only with the ICM controller

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

VMSES Local Modification Example – DMSSICMO #1

```

/*****/
/* CMO User Configurable Settings */
/*****/
cmo_admin_password           = "zlinux"
cmo_data_disk = "LS9F26 LS9F27 LS9F28 LS9F29 LS9F68 LS9F69 LS9F4C"
openstack_system_role       = "controller"
openstack_controller_address = "172.110.100.201"
openstack_zvm_diskpool      = "ECKD:LIN9F"
openstack_instance_name_template = "cmo%05x"
openstack_zvm_fcp_list      = "NONE"
openstack_zvm_timeout       = "300"
openstack_zvm_scsi_pool     = "NONE"
openstack_zvm_zhpc_fcp_list = "NONE"
openstack_san_ip            = "NONE"
openstack_san_private_key   = "NONE"
openstack_storwize_svc_volpool_name = "NONE"
openstack_storwize_svc_vol_iogrp = "NONE"
openstack_zvm_image_default_password = "zlinux"
openstack_xcat_mgt_ip       = "NONE"
openstack_xcat_mgt_mask     = "NONE"
openstack_zvm_xcat_master   = "xcat1"
openstack_zvm_vmrelocate_force = "NONE"

```

VMSES Local Modification Example– DMSSICMO #2

```

/*****/
/* CMO User Configurable Settings */
/*****/
cmo_admin_password           = "zlinux"
cmo_data_disk                = ""
openstack_system_role       = "compute"
openstack_controller_address = "172.110.100.201"
openstack_zvm_diskpool      = "ECKD:LIN9F"
openstack_instance_name_template = "cmo%05x"
openstack_zvm_fcp_list      = "NONE"
openstack_zvm_timeout       = "300"
openstack_zvm_scsi_pool     = "NONE"
openstack_zvm_zhpc_fcp_list = "NONE"
openstack_san_ip            = "NONE"
openstack_san_private_key   = "NONE"
openstack_storwize_svc_volpool_name = "NONE"
openstack_storwize_svc_vol_iogrp = "NONE"
openstack_zvm_image_default_password = "zlinux"
openstack_xcat_mgt_ip       = "NONE"
openstack_xcat_mgt_mask     = "NONE"
openstack_zvm_xcat_master   = "xcat1"
openstack_zvm_vmrelocate_force = "NONE"

```

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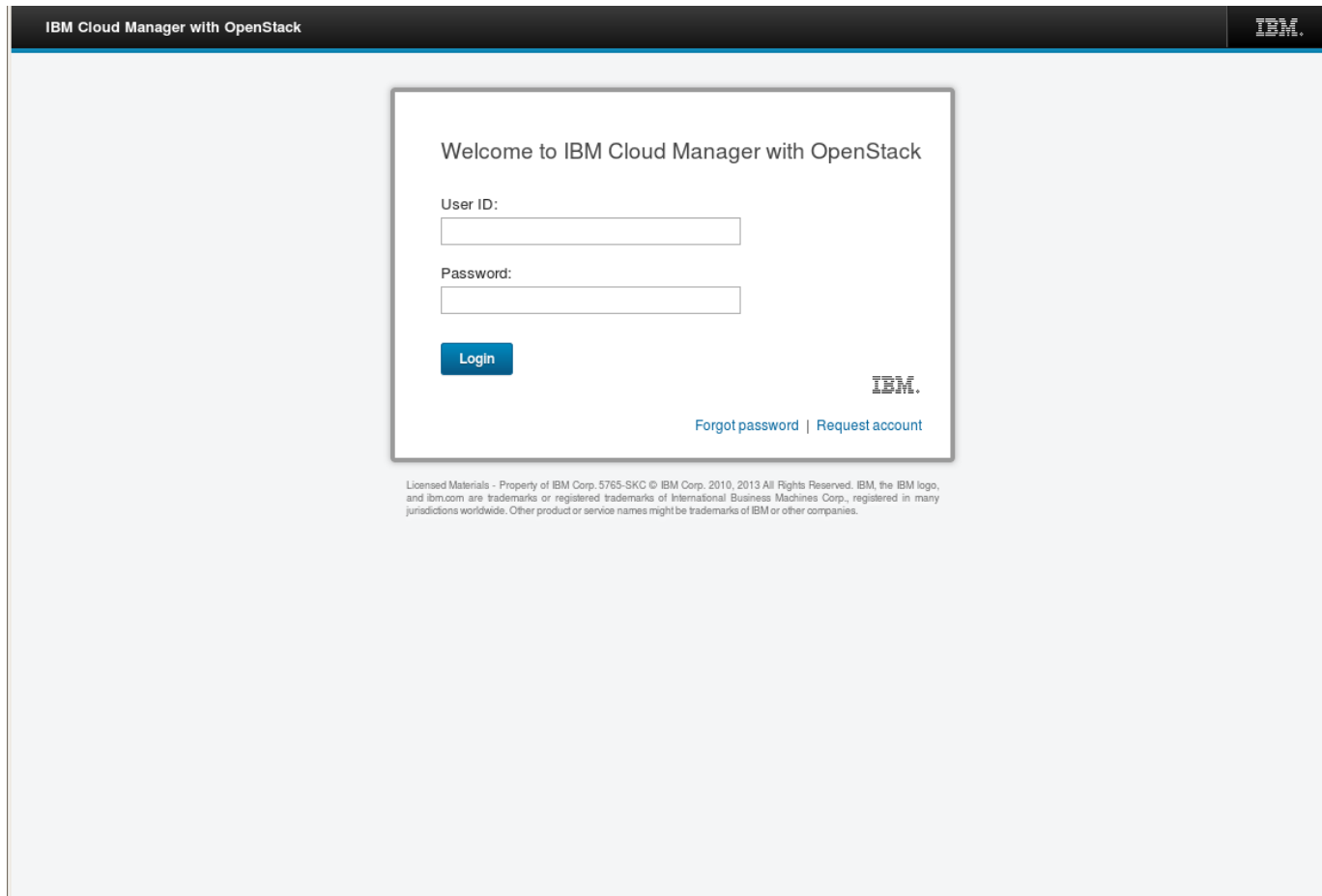
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Installation & Customization – Starting the Appliance

- Started automatically by SMAPI
- In a Controller + Compute Node configuration, always start the controller first
- XAUTOLOG VSMGUARD
- Suggest capturing the console output via your preferred method
- First controller start can take some time as it formats and adds each volume to the LVM in the ICM appliance
- ssh in to the appliance and validate the LVM exists with all the disks you defined
- Validate the IP configuration and VSWITCH connectivity is as you intended

Installation & Customization – Configure Cloud



IBM Cloud Manager with OpenStack

IBM.

Welcome to IBM Cloud Manager with OpenStack

User ID:

Password:

Login

IBM.

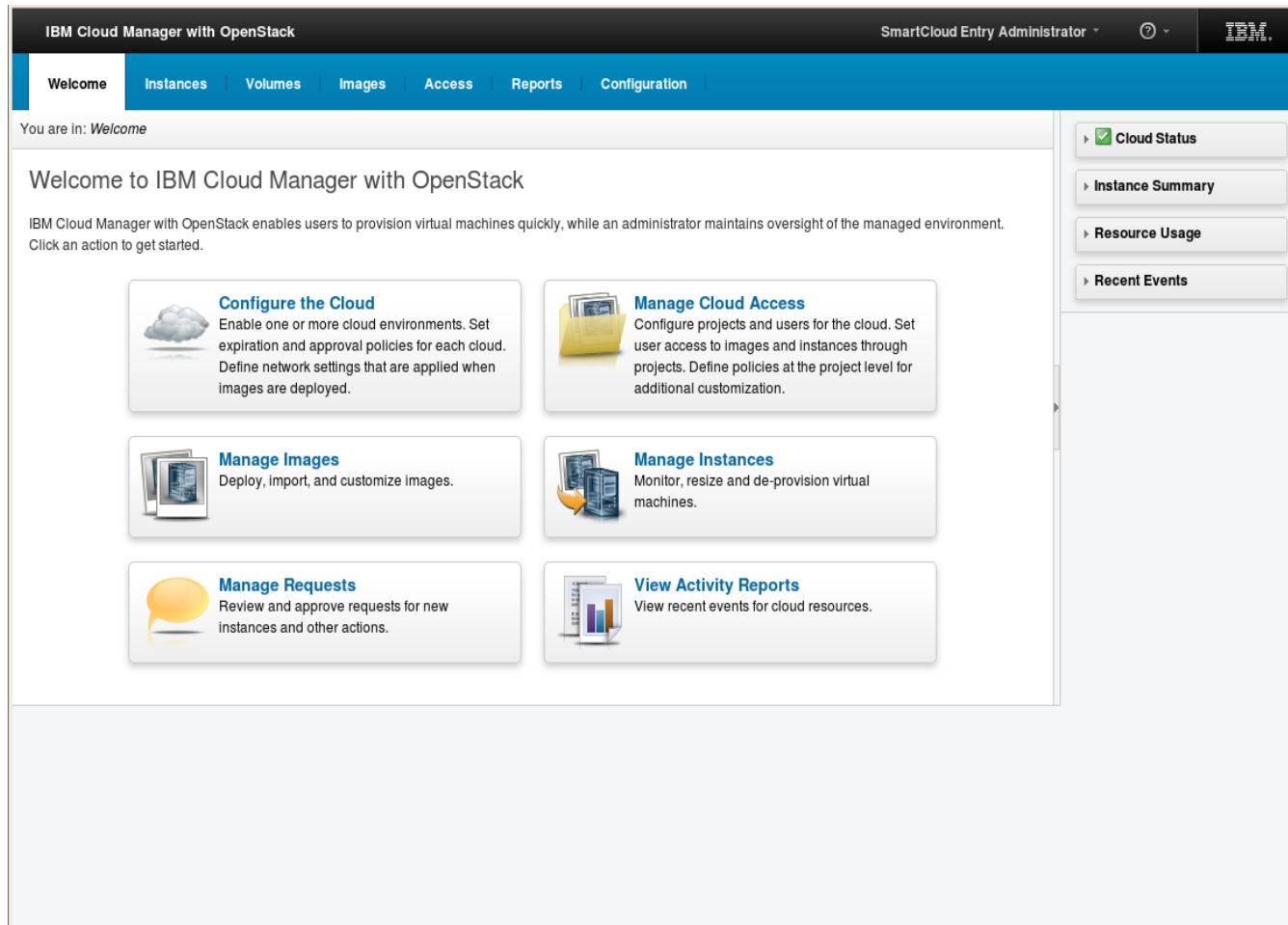
[Forgot password](#) | [Request account](#)

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- IBM Cloud Manager UI
- <https://<<IP>>:18443/cloud/web/login.html>

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Installation & Customization



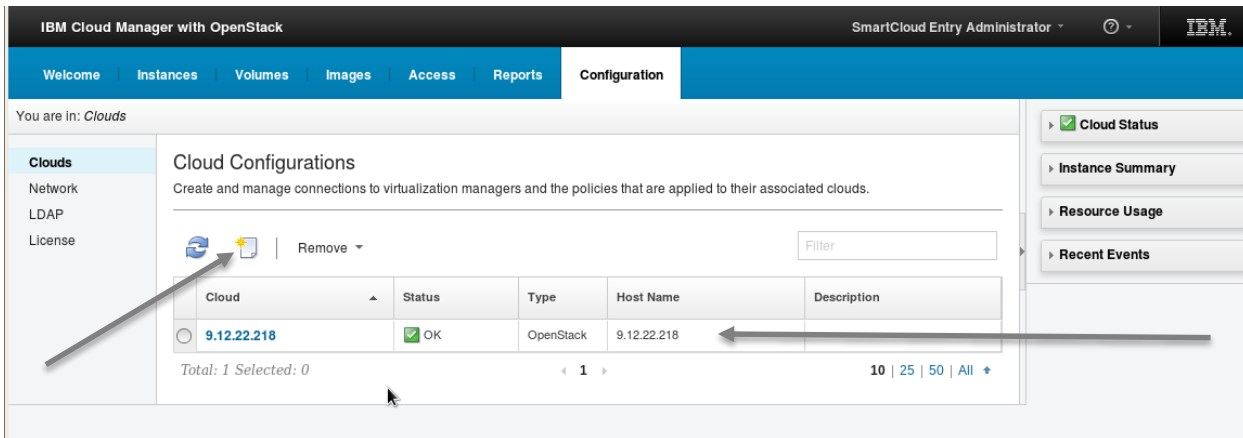
The screenshot shows the IBM Cloud Manager with OpenStack administrator interface. The top navigation bar includes "Welcome", "Instances", "Volumes", "Images", "Access", "Reports", and "Configuration". The main content area is titled "Welcome to IBM Cloud Manager with OpenStack" and provides a brief overview of the tool's purpose. It features six action cards: "Configure the Cloud", "Manage Cloud Access", "Manage Images", "Manage Instances", "Manage Requests", and "View Activity Reports". A right-hand sidebar contains a list of dashboard widgets: "Cloud Status", "Instance Summary", "Resource Usage", and "Recent Events".

- ICM UI via administrator login

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

Installation & Customization

- One of the first steps is to define a “cloud configuration”
- An already defined “cloud configuration” is shown below
- To define a cloud configuration, click on the add “cloud configuration” icon



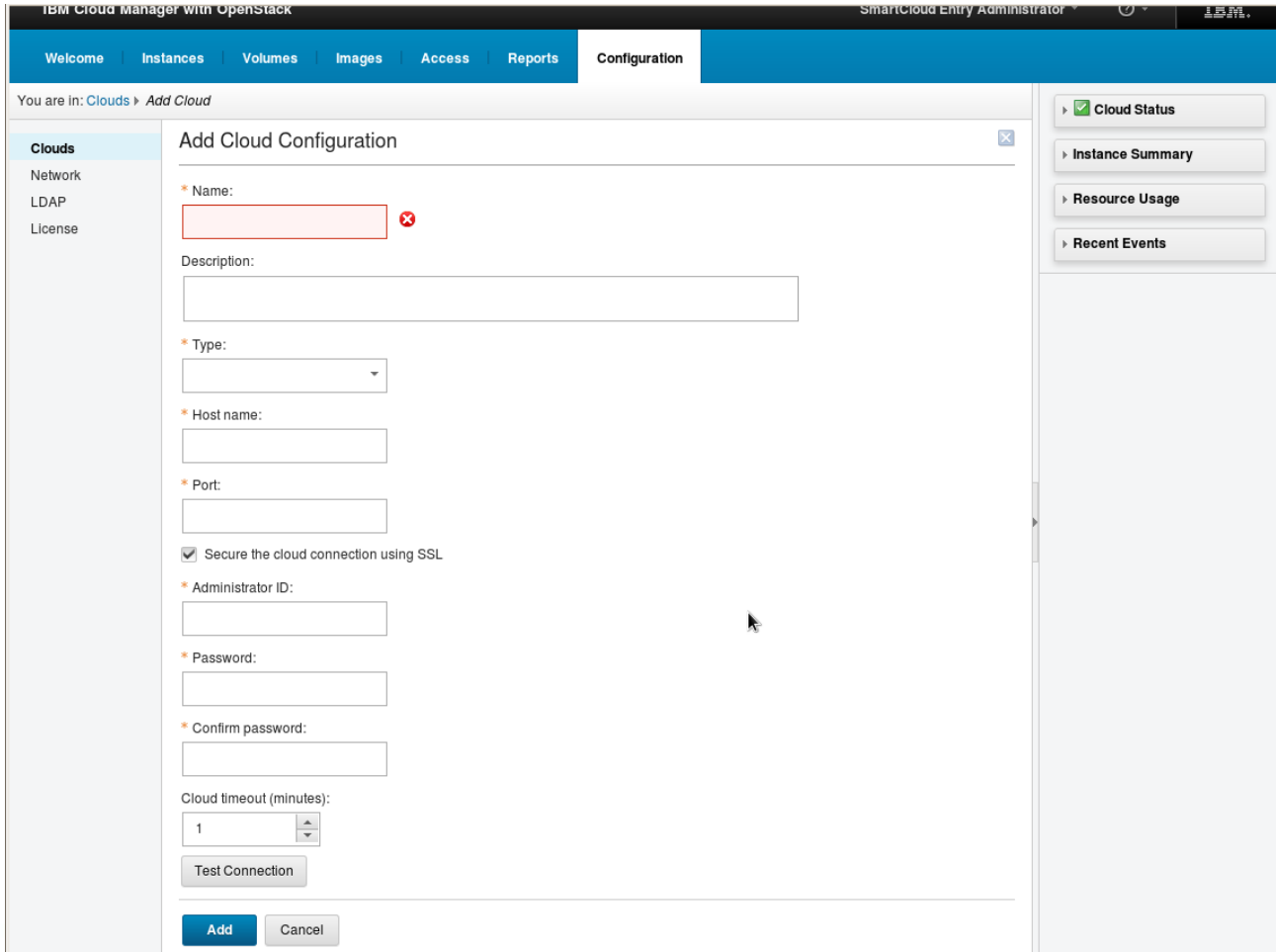
The screenshot displays the IBM Cloud Manager with OpenStack interface. The top navigation bar includes 'Welcome', 'Instances', 'Volumes', 'Images', 'Access', 'Reports', and 'Configuration'. The main content area is titled 'Cloud Configurations' and contains a table with the following data:

Cloud	Status	Type	Host Name	Description
9.12.22.218	OK	OpenStack	9.12.22.218	

Annotations in the image include an arrow pointing to the 'Add' icon (a document with a plus sign) and another arrow pointing to the 'Host Name' column header.

Installation & Customization

- An empty “cloud configuration”

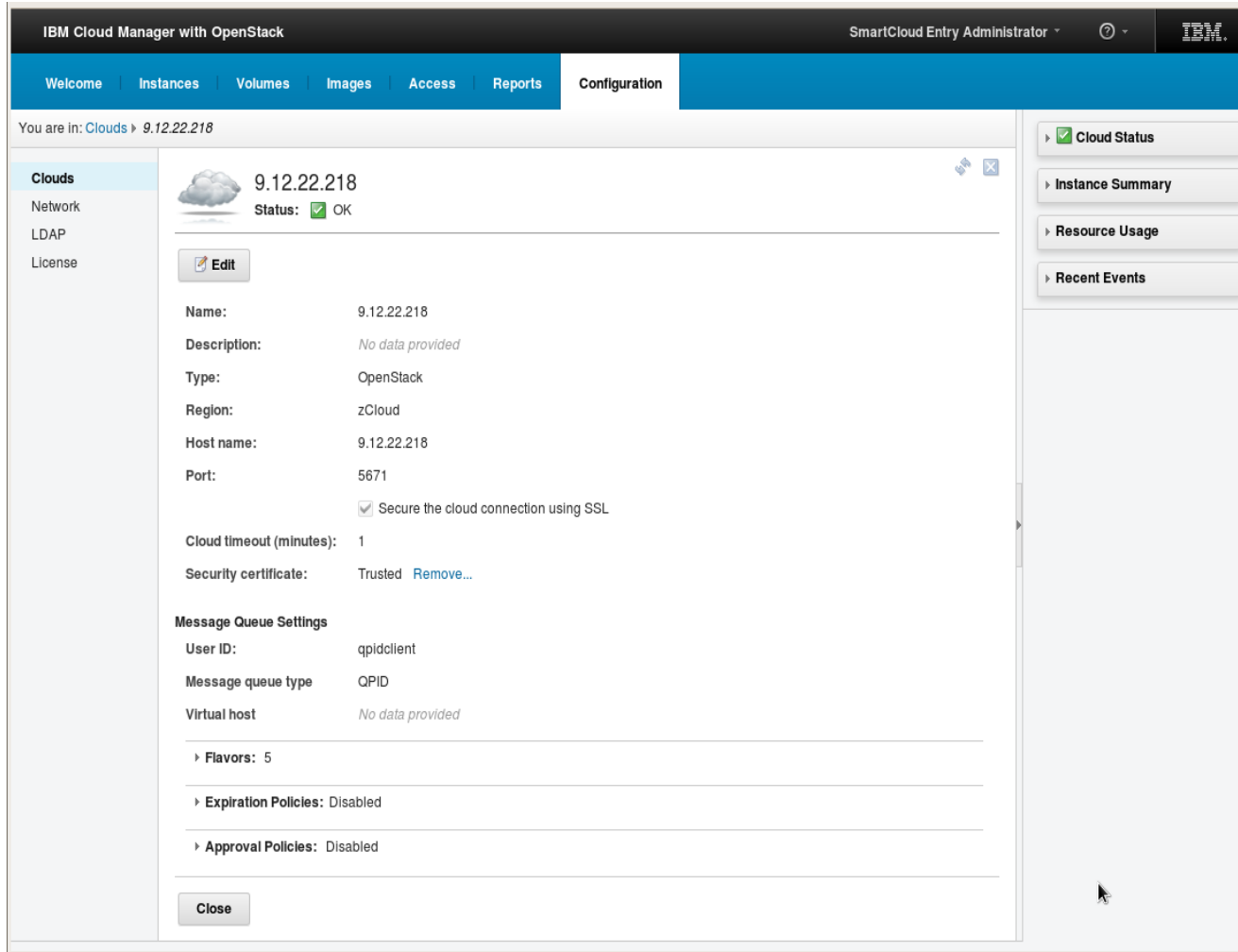


The screenshot shows the 'Add Cloud Configuration' form in the IBM Cloud Manager interface. The form is titled 'Add Cloud Configuration' and is located in the 'Configuration' section. The form fields include:

- Name:** A text input field with a red border and a red 'x' icon, indicating it is required and currently empty.
- Description:** A text input field.
- Type:** A dropdown menu.
- Host name:** A text input field.
- Port:** A text input field.
- Secure the cloud connection using SSL**
- Administrator ID:** A text input field.
- Password:** A text input field.
- Confirm password:** A text input field.
- Cloud timeout (minutes):** A spinner control set to 1.
- Test Connection:** A button.
- Add:** A blue button.
- Cancel:** A grey button.

The right sidebar contains several expandable sections: **Cloud Status** (checked), **Instance Summary**, **Resource Usage**, and **Recent Events**.

Installation & Customization



IBM Cloud Manager with OpenStack | SmartCloud Entry Administrator | IBM

Navigation: Welcome | Instances | Volumes | Images | Access | Reports | **Configuration**

You are in: Clouds > 9.12.22.218

Clouds

- Network
- LDAP
- License

9.12.22.218 Status: OK

[Edit](#)

Name: 9.12.22.218

Description: *No data provided*

Type: OpenStack

Region: zCloud

Host name: 9.12.22.218

Port: 5671

Secure the cloud connection using SSL

Cloud timeout (minutes): 1

Security certificate: Trusted [Remove...](#)

Message Queue Settings

User ID: qpidclient

Message queue type: QPID

Virtual host: *No data provided*

▸ **Flavors:** 5

▸ **Expiration Policies:** Disabled

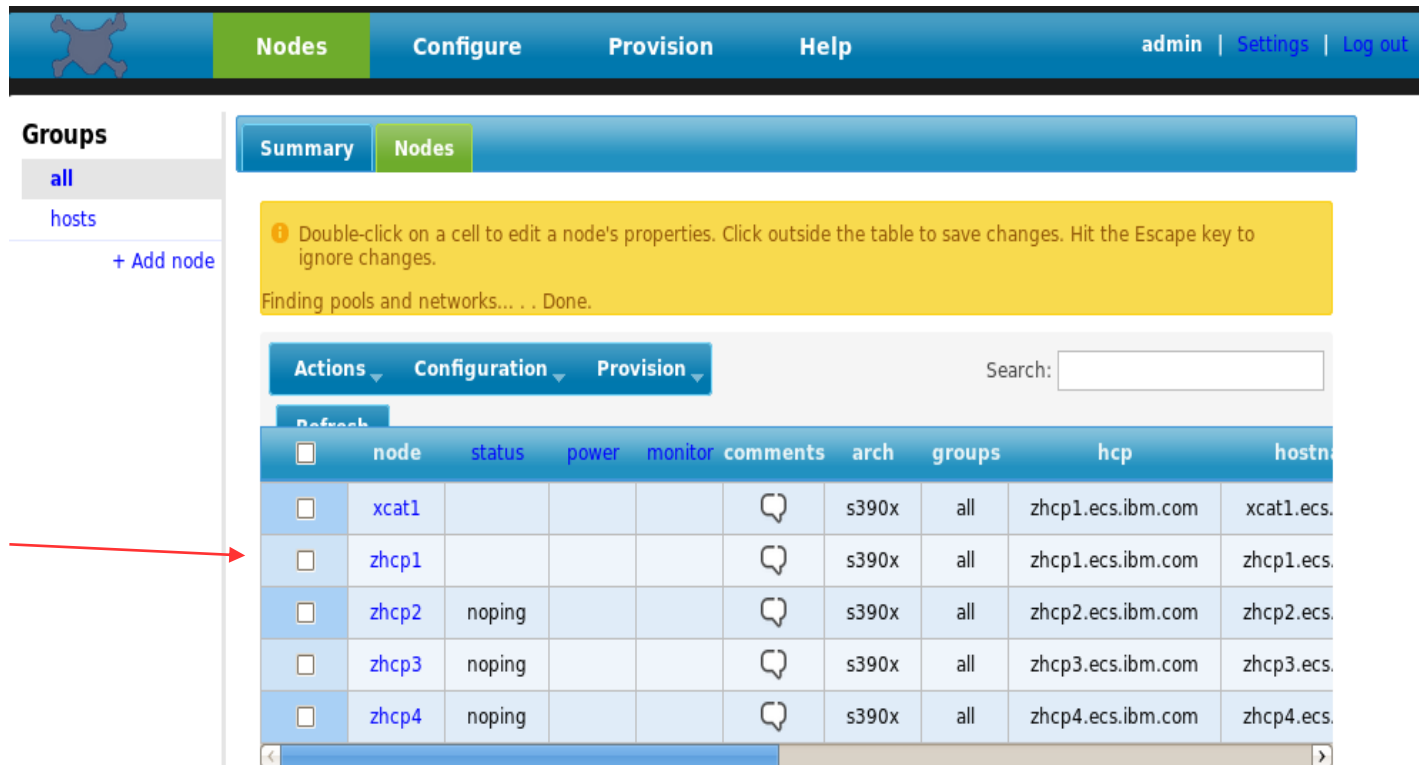
▸ **Approval Policies:** Disabled

[Close](#)

Right sidebar:

- Cloud Status
- Instance Summary
- Resource Usage
- Recent Events

Installation & Customization - xCAT



The screenshot shows the xCAT web interface. At the top, there is a navigation bar with 'Nodes', 'Configure', 'Provision', and 'Help' tabs. The 'Nodes' tab is active. Below the navigation bar, there is a 'Groups' sidebar on the left with 'all' and 'hosts' options, and a '+ Add node' link. The main content area has 'Summary' and 'Nodes' tabs, with 'Nodes' selected. A yellow message box at the top of the main area says: 'Double-click on a cell to edit a node's properties. Click outside the table to save changes. Hit the Escape key to ignore changes. Finding pools and networks... Done.' Below this, there are dropdown menus for 'Actions', 'Configuration', and 'Provision', and a search box. The main part of the interface is a table with the following columns: node, status, power, monitor, comments, arch, groups, hcp, and hostname. The table contains five rows of nodes: xcat1, zhcp1, zhcp2, zhcp3, and zhcp4. A red arrow points to the 'zhcp1' node in the table.

node	status	power	monitor	comments	arch	groups	hcp	hostname
xcat1					s390x	all	zhcp1.ecs.ibm.com	xcat1.ecs.ibm.com
zhcp1					s390x	all	zhcp1.ecs.ibm.com	zhcp1.ecs.ibm.com
zhcp2	noping				s390x	all	zhcp2.ecs.ibm.com	zhcp2.ecs.ibm.com
zhcp3	noping				s390x	all	zhcp3.ecs.ibm.com	zhcp3.ecs.ibm.com
zhcp4	noping				s390x	all	zhcp4.ecs.ibm.com	zhcp4.ecs.ibm.com

- For a single system, the xCAT and zHCP entries are prepopulated via DMSSICNF
- A multi system configuration requires some additional xCAT definitions
- 4 Way SSI Example, 1 Controller Node, 3 Compute Nodes
- Test SMAPI connectivity by clicking on each zhcp
- Steps to define all systems in xCAT are not shown here, but must be performed

Validating xCAT access to SMAPI via ZHCP

admin | [Settings](#) | [Log out](#)
Nodes
Configure
Provision
Help

Groups

all

hosts

+ Add node

Summary
Nodes
zhcp1 ✕

[Show directory entry](#)

General

z/VM UserID: ZHCP

z/VM Hypervisor: ECS1

xCAT Hypervisor Node: unknown

Operating System:

Architecture: s390x

Uptime: 0 days min

CPU Used Time: 8274116085 uS

Hardware

Privileges

Currently: G

Directory: G

Total Memory

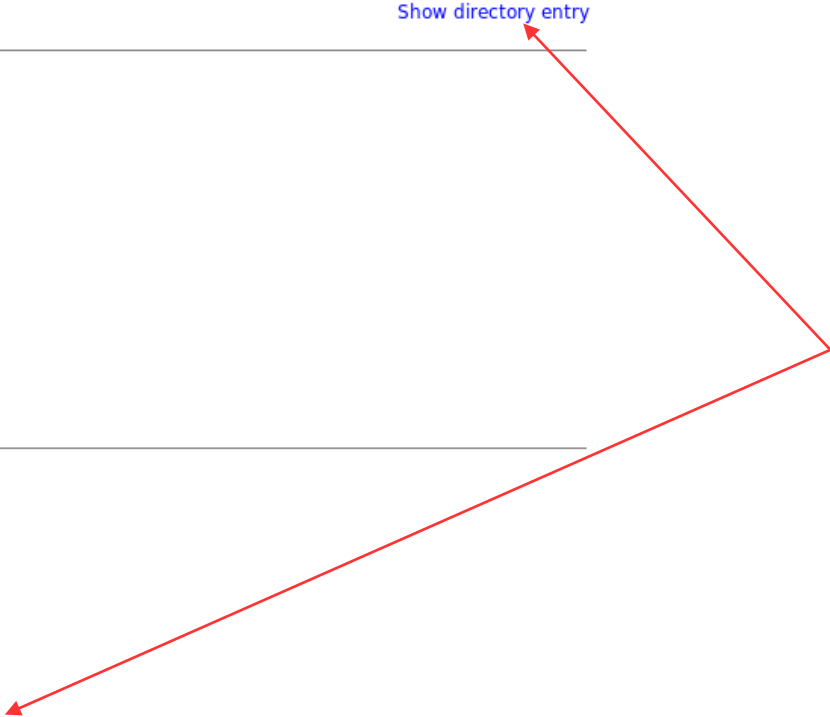
1G

Processors

Type	Address	ID	Base	Dedicated	Affinity
CP	01	FF14750928178000	false	false	ON
CP	00	FF14750928178000	true	false	ON

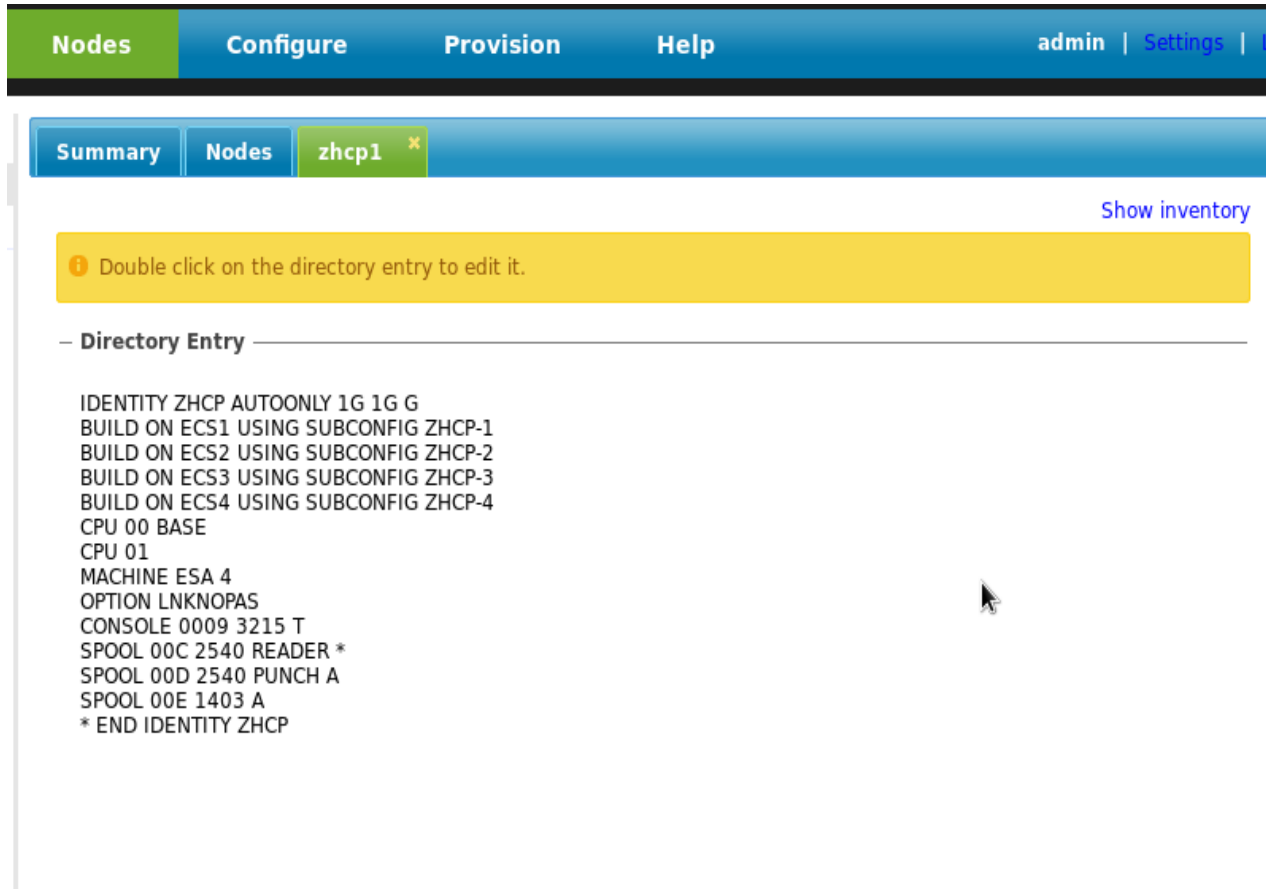
+ Add temporary processor

Disks



Validating xCAT access to SMAPI via ZHCP

- Successful retrieval of directory entry indicates you are communicating with SMAPI and DIRMAINT



The screenshot shows the xCAT web interface. The top navigation bar includes 'Nodes', 'Configure', 'Provision', and 'Help', along with user information 'admin | Settings | Log out'. Below this, a secondary navigation bar shows 'Summary', 'Nodes', and 'zhcp1' (with a close icon). A yellow message box states: 'Double click on the directory entry to edit it.' Below this, the 'Directory Entry' section displays the following text:

```
IDENTITY ZHCP AUTOONLY 1G 1G G
BUILD ON ECS1 USING SUBCONFIG ZHCP-1
BUILD ON ECS2 USING SUBCONFIG ZHCP-2
BUILD ON ECS3 USING SUBCONFIG ZHCP-3
BUILD ON ECS4 USING SUBCONFIG ZHCP-4
CPU 00 BASE
CPU 01
MACHINE ESA 4
OPTION LNKNOPAS
CONSOLE 0009 3215 T
SPOOL 00C 2540 READER *
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403 A
* END IDENTITY ZHCP
```

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

Installation & Customization – Neutron

- Polling interval may need to be increased, maximum is 600 seconds, defaults is 5 seconds. Development recommends no more than 400.
- zVM xCAT password should be updated (xCAT HTTP password). When changing the xCAT HTTP password you must also update the reference in the neutron file(s)
- One or more networks and subnets must be defined

```
[mnadmin@xcat1 zvm] $ pwd  
/etc/neutron/plugins/zvm  
[mnadmin@xcat1 zvm] $ sudo vi neutron_zvm_plugin.ini
```

Installation & Customization – Neutron

```
[AGENT]
zvm_xcat_server = 9.12.22.218
zvm_xcat_username = admin
zvm_xcat_password = 50fK7FcjDjvR.
zvm_host = ecs1
xcat_zhcp_nodename = zhcp1
polling_interval = 5
zvm_xcat_timeout = 300
# (StrOpt) xCat REST API username, default value is admin.
# zvm_xcat_username = admin
# Example: zvm_xcat_username = guest

# (StrOpt) Password of the xCat REST API user, default value is admin
# zvm_xcat_password = admin
# Example: zvm_xcat_password = passw0rd

# (StrOpt) xCat MN server address, IP address or host name
# zvm_xcat_server = YourxCATMNServerAddress
# Example: zvm_xcat_server = 10.0.0.1

# (StrOpt) xCat zHCP nodename in xCAT, default value is zhcp
# xcat_zhcp_nodename = zhcp
# Example: xcat_zhcp_nodename = myzhcp1

# (StrOpt) The compute node name neutron-zvm-agent work on, same as 'host' in nova.conf
# zvm_host = opnstk1
# Example: zvm_host = opnstk1

# (IntOpt) Agent's polling interval in seconds, default value is 2 seconds
# polling_interval = 2
# Example: polling_interval = 5
```

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

Installation & Customization – Neutron

```
[mnadmin@xcat1 neutron] $ neutron net-create mgmtnet --provider:network_type flat --provider:physical_network mgmtnet
```

Created a new network:

Field	Value
admin_state_up	True
id	f8476e34-8818-471e-83c6-5bdb0882fcb0
name	mgmtnet
provider:network_type	flat
provider:physical_network	mgmtnet
provider:segmentation_id	
router:external	False
shared	False
status	ACTIVE
subnets	
tenant_id	57d48413ddfc432db983b192bf9e2bcf

```
[mnadmin@xcat1 neutron] $
```

- VSWITCH from DMSSICNF
- You could have more than one but it must be defined to neutron
- Linux guest must be reachable from XCAT over the network

Installation & Customization – Neutron

```
[mnadmin@xcat1 neutron] $ neutron subnet-create --allocation-pool
start=172.110.150.20,end=172.110.150.45 --gateway 172.110.150.1 mgmtnet
172.110.150.0/24
```

Created a new subnet:

Field	Value
allocation_pools	{"start": "172.110.150.20", "end": "172.110.150.45"}
cidr	172.110.150.0/24
dns_nameservers	
enable_dhcp	True
gateway_ip	172.110.150.1
host_routes	
id	c5892167-7934-4181-96a4-d8e116c21cb7
ip_version	4
ipv6_address_mode	
ipv6_ra_mode	
name	
network_id	f8476e34-8818-471e-83c6-5bdb0882fcb0
tenant_id	57d48413ddfc432db983b192bf9e2bcf

```
[mnadmin@xcat1 neutron] $
```

Installation & Customization – Neutron

- If neutron.conf was modified, restart the appliance
- After the appliance is restarted validate all of your services are “UP”

```
[mnadmin@xcat1 zvm] $ nova service-list
```

Id	Binary	Host	Zone	Status	State	Updated_at	Disabled Reason
1	nova-cert	ecs1	internal	enabled	up	2015-04-03T02:50:44.000000	-
2	nova-conductor	ecs1	internal	enabled	up	2015-04-03T02:50:43.000000	-
3	nova-console	ecs1	internal	enabled	up	2015-04-03T02:50:46.000000	-
5	nova-consoleauth	ecs1	internal	enabled	up	2015-04-03T02:50:37.000000	-
6	nova-scheduler	ecs1	internal	enabled	up	2015-04-03T02:50:37.000000	-
7	nova-compute	ecs1	nova	enabled	up	2015-04-03T02:50:41.000000	-

```
[mnadmin@xcat1 zvm] $
```

ICM Session Agenda

- ❑ IBM Cloud Manager and OpenStack
- ❑ Architecture on z Systems
- ❑ Installation and Customization
 - ❑ DMSSICNF and DMSSICMO
 - ❑ Appliance
- **Virtual Server Requirements**
- ❑ Virtual Server Image Capture
- ❑ Virtual Server Deployment
- ❑ SMTP Notifications
- ❑ LDAP Authentication

- ❑ Chef Server, Client, Recipes
- ❑ Resources and References

Virtual Server Requirements


- ❑ Per Enabling z/VM for Openstack Guide
 - ❑ RHEL 6.2 – RHEL 6.5 and SLES 11 SP2 – SP3 are officially supported
- ❑ Root disk of type ECKD or FBA for snapshot / spawn
- ❑ When deploying a new server with an ephemeral disk, both the root disk and ephemeral disk will be of type specified in zvm_diskpool
- ❑ Sizes no larger than 5 GB are strongly recommended (but did not observe an issue with larger sizes)
- ❑ Root filesystem must NOT be a logical volume
- ❑ Root filesystem on a non-full pack minidisk (no cyl 0)
- ❑ Must use virtual device 100 to boot
- ❑ Should support ssh keys for accessing the server
- ❑ Should be an exact full GB size multiple (except for flavor size zero)
- ❑ Can not deploy to a smaller disk
- ❑ Follow the steps to “Make a deployable z/VM Image”
 - ❑ Packages, including xcatconf4z, cloud-init
 - ❑ Define in xCAT

ICM Session Agenda

- ❑ IBM Cloud Manager and OpenStack
- ❑ Architecture on z Systems
- ❑ Installation and Customization
 - ❑ DMSSICNF and DMSSICMO
 - ❑ Appliance
- ❑ Virtual Server Requirements
- **Virtual Server Image Capture**
- ❑ Virtual Server Deployment
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- ❑ Chef Server, Client, Recipes
- ❑ Resources and References

Virtual Server Image Capture – Run Script


Nodes
Configure
Provision
Help
admin | [Settings](#) | [Log out](#)

Groups

- all
- hosts
- + Add node

Summary
Nodes

i Double-click on a cell to edit a node's properties. Click outside the table to save changes. Hit the Escape key to ignore changes.






Finding pools and networks... . Done.

Actions ▾


Configuration ▾

Provision ▾

Search:

	status	power	monitor	comments	arch	groups	hcp	hostname
Clone								
Delete								
Migrate					s390x	all	zhcp1.ecs.ibm.com	xcat1.ecs.
Power on					s390x	all	zhcp1.ecs.ibm.com	zhcp1.ecs
Power off	noping				s390x	all	zhcp2.ecs.ibm.com	zhcp2.ecs
Run script	noping				s390x	all	zhcp3.ecs.ibm.com	zhcp3.ecs
Shutdown	noping				s390x	all	zhcp4.ecs.ibm.com	zhcp4.ecs

Showing 1 to 5 of 5 entries




Virtual Server Image Capture - mkdef

Summary Nodes **Script** x


i Load a script to run against this node range.

– Virtual Machine

 Target node range:

– Script

Remote file: No file selected.

 Script:


```
/opt/xcat/bin/mkdef -t node -o ecrhelm1
userid=ecrhelm1 hcp=zhcp1.ecs.ibm.com mgt=zvm
groups=all
```


Virtual Server Image Capture - chtab

Summary Nodes Script ✕


i Load a script to run against this node range.

– **Virtual Machine**

 Target node range:

– **Script**

Remote file:

 Script:

```
/opt/xcat/sbin/chtab node=ecrhelm1
hosts.ip="172.110.150.125"
hosts.hostnames="ecrhelm1.ecs.ibm.com"
noderes.netboot=zvm nodetype.os=rhel6.5
nodetype.arch=s390x nodetype.profile=rh65m1profile
nodetype.provmethod=netboot
```

Virtual Server Image Capture - chtab

admin | [Settings](#) | [Log out](#)
Nodes Configure Provision Help

Groups

- all
- hosts
- + Add node

Summary
Nodes

i Double-click on a cell to edit a node's properties. Click outside the table to save changes. Hit the Escape key to ignore changes.

Actions ▾

Configuration ▾

Provision ▾

Search:

Refresh

	node	status	power	monitor	comments	arch	groups	hcp	
<input type="checkbox"/>	ecrhelm1				💬	s390x	all	zhcp1.ecs.ibm.com	ecrhelm1
<input type="checkbox"/>	xcat1				💬	s390x	all	zhcp1.ecs.ibm.com	xcat1
<input type="checkbox"/>	zhcp1				💬	s390x	all	zhcp1.ecs.ibm.com	zhcp1
<input type="checkbox"/>	zhcp2	noping			💬	s390x	all	zhcp2.ecs.ibm.com	zhcp2
<input type="checkbox"/>	zhcp3	noping			💬	s390x	all	zhcp3.ecs.ibm.com	zhcp3
<input type="checkbox"/>	zhcp4	noping			💬	s390x	all	zhcp4.ecs.ibm.com	zhcp4

Showing 1 to 6 of 6 entries

Virtual Server Image Capture - ctab

admin | [Settings](#) | [Log out](#)
Nodes
Configure
Provision
Help

Groups

- all
- hosts
- + Add node

Summary
Nodes


i Double-click on a cell to edit a node's properties. Click outside the table to save changes. Hit the Escape key to ignore changes.

Actions ▾
Configuration ▾
Provision ▾
Search:

hostnames	ip	mgt	netboot	os	postbootscripts	postscript
ecrhelm1.ecs.ibm.com	172.110.150.125	zvm	zvm	rhel6.5	otherpkgs	syslog,remoteshell,
xcat1.ecs.ibm.com	9.12.22.218	zvm			otherpkgs	syslog,remoteshell,
zhcp1.ecs.ibm.com	172.110.150.211	zvm			otherpkgs	syslog,remoteshell,
zhcp2.ecs.ibm.com	172.110.150.212	zvm			otherpkgs	syslog,remoteshell,
zhcp3.ecs.ibm.com	172.110.150.213	zvm			otherpkgs	syslog,remoteshell,
zhcp4.ecs.ibm.com	172.110.150.214	zvm			otherpkgs	syslog,remoteshell,

Showing 1 to 6 of 6 entries

Virtual Server Image Capture – unlock server


admin | [Settings](#) | [Log out](#)

Groups

- all
- hosts
- [+ Add node](#)

Summary
Nodes

i Double-click on a cell to edit a node's properties. Click outside the table to save changes. Hit the Escape key to ignore changes.

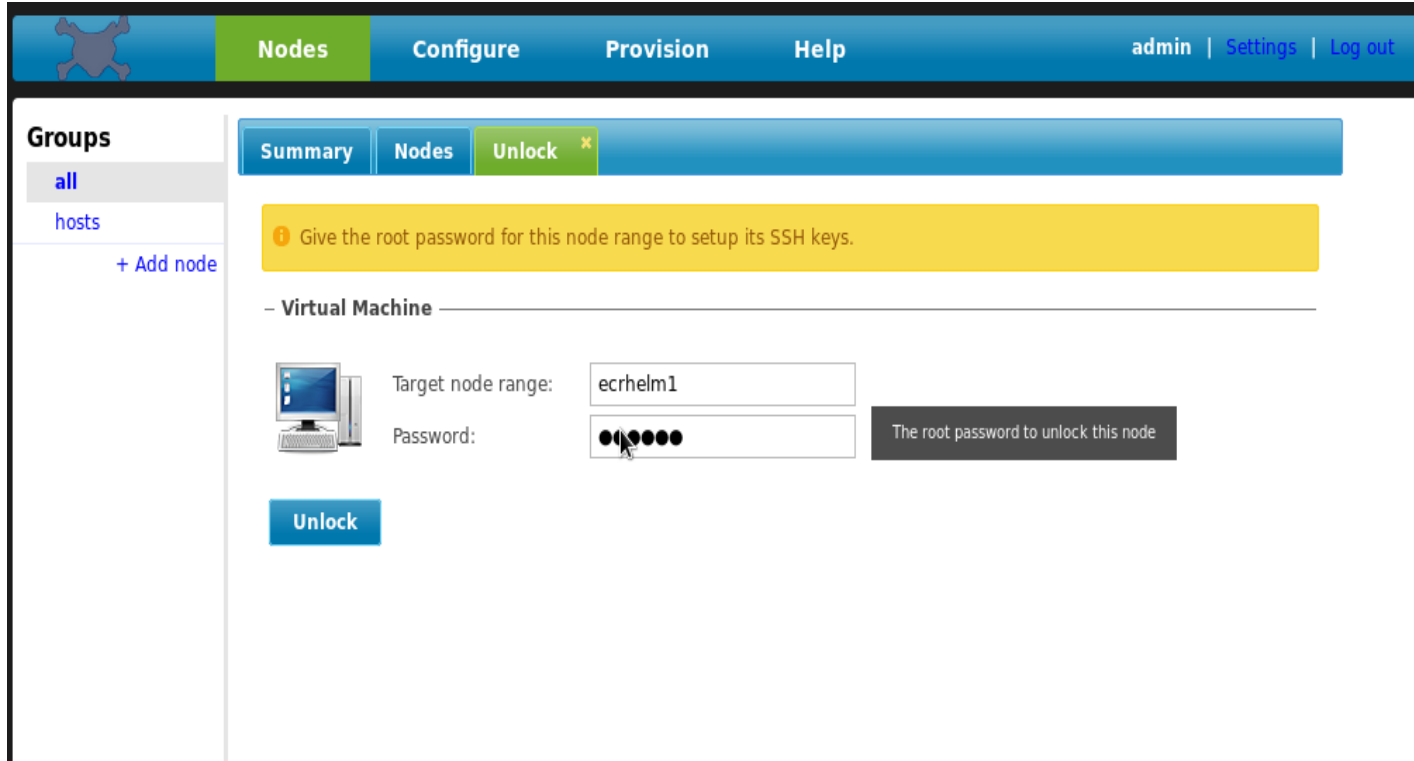
Actions ▾
Configuration ▾
Provision ▾

Search:

	power	monitor	comments	arch	groups	hcp	h		
<input type="checkbox"/>				s390x	all	zhcp1.ecs.ibm.com	ecrhel		
<input checked="" type="checkbox"/>				s390x	all	zhcp1.ecs.ibm.com	xcat1		
<input type="checkbox"/>				s390x	all	zhcp1.ecs.ibm.com	zhcp:		
<input type="checkbox"/>				s390x	all	zhcp2.ecs.ibm.com	zhcp:		
<input type="checkbox"/>				s390x	all	zhcp3.ecs.ibm.com	zhcp:		
<input type="checkbox"/>				s390x	all	zhcp4.ecs.ibm.com	zhcp:		

Showing 1 to 6 of 6 entries

Virtual Server Image Capture – root password



The screenshot displays a web interface for managing nodes. The top navigation bar features a logo on the left and menu items: **Nodes**, **Configure**, **Provision**, and **Help**. On the right side of the navigation bar, there are links for **admin**, **Settings**, and **Log out**.

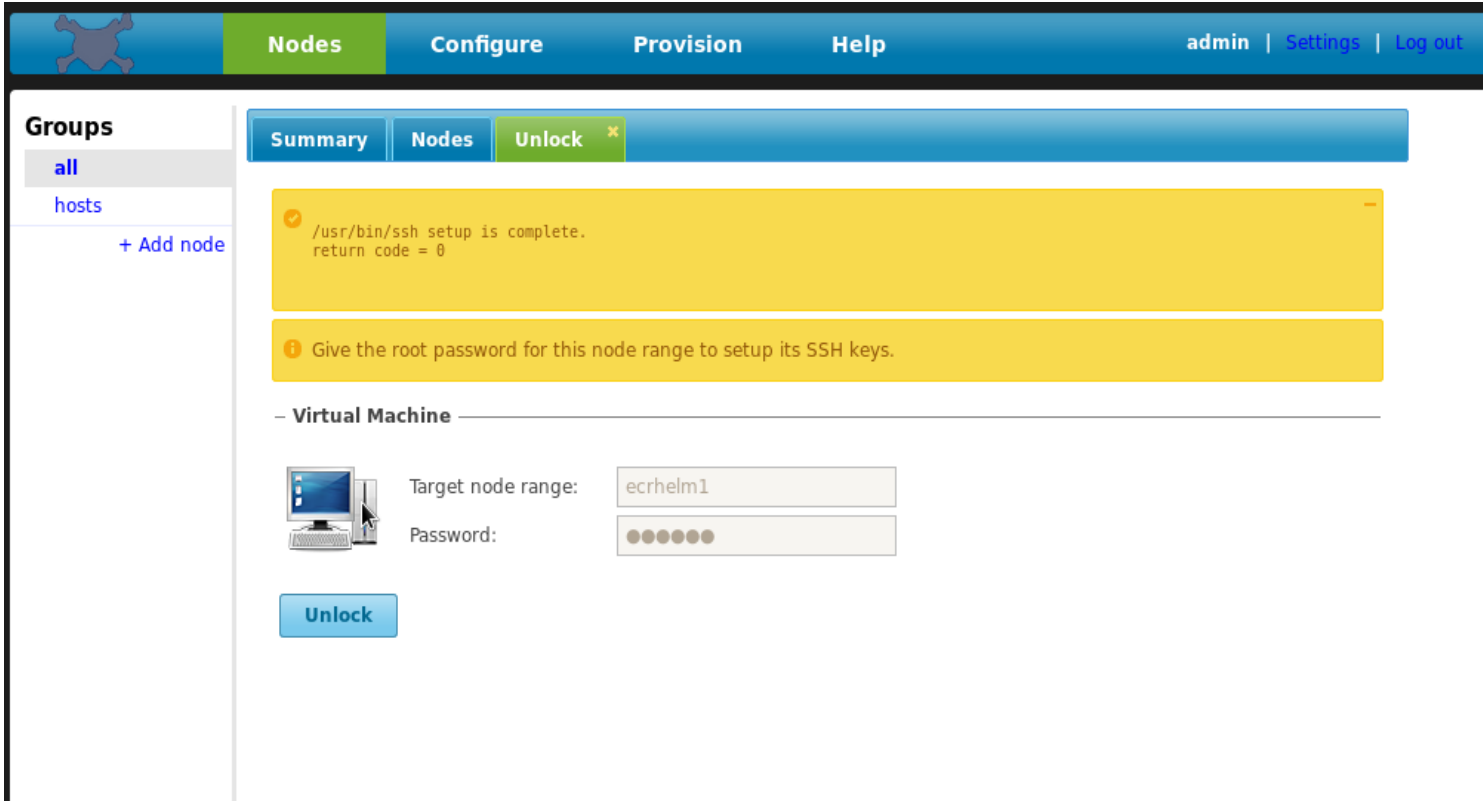
On the left side, there is a sidebar titled **Groups** with a list containing **all** and **hosts**, and a **+ Add node** link.

The main content area has a sub-navigation bar with **Summary**, **Nodes**, and **Unlock ***. Below this, a yellow warning box contains the text: "Give the root password for this node range to setup its SSH keys."

The **Virtual Machine** section includes a computer icon and two input fields: "Target node range:" with the value "ecrhelm1" and "Password:" with masked characters. A dark grey tooltip next to the password field reads: "The root password to unlock this node".

A blue **Unlock** button is positioned below the input fields.

Virtual Server Image Capture – unlock success



Nodes Configure Provision Help admin | Settings | Log out

Groups


- all
- hosts
- + Add node

Summary **Nodes** **Unlock** ✕

✓ /usr/bin/ssh setup is complete.
return code = 0

ⓘ Give the root password for this node range to setup its SSH keys.

– Virtual Machine

 Target node range:

Password:

Unlock


Virtual Server Image Capture - imgcapture

Nodes | **Configure** | **Provision** | **Help** | [admin](#) | [Settings](#)

Summary | **Nodes** | **Script** ✕


Load a script to run against this node range.

Virtual Machine

 Target node range:

Script

Remote file: No file selected.

 Script:

```
/opt/xcat/bin/imgcapture ecrhelm1 --profile  
rh65m1profile
```

Virtual Server Image Capture

- ❑ Guest to capture must be up
- ❑ Image capture process will shut it down

Virtual Server Image Capture – imgcapture results

```
ecrhelml: Capturing the image using zHCP node
ecrhelml: creatediskimage start time: 2015-04-03-02:01:32.913
SOURCE USER ID: "ECRHELM1"
DISK CHANNEL:    "0100"
IMAGE FILE:
"/mnt/xcat1.ecs.ibm.com/install/staging/rhel6.5/s390x/rh65m1profile/0100.img"
COMPRESSION:    "6"
```

```
Creating 0100.img image file for ECRHELM1's disk at channel 0100 with disk size 8730 CYL.
Compression level: 6
Image creation successful.
creatediskimage end time: 2015-04-03-02:05:54.493
```

```
ecrhelml: Moving the image files to the deployable directory:
/install/netboot/rhel6.5/s390x/rh65m1profile
ecrhelml: Completed capturing the image(rhel6.5-s390x-netboot-rh65m1profile) and stored at
/install/netboot/rhel6.5/s390x/rh65m1profile
```

0


Virtual Server Image Capture - imgexport

Nodes | **Configure** | Provision | Help | admin | Settings | Log out

Summary | Nodes | **Script** ✕


i Load a script to run against this node range.

– Virtual Machine –

 Target node range:

– Script –

Remote file: No file selected.

 Script:

```
/opt/xcat/bin/imgexport rhel6.5-s390x-netboot-  
rh65m1profile --remotehost nova@9.12.22.218
```

Virtual Server Image Capture – imgexport results

```
Exporting rhel6.5-s390x-netboot-rh65mlprofile to nova@9.12.22.218...  
Inside /install/imgexport.56447.2kDGVM.  
Compressing rhel6.5-s390x-netboot-rh65mlprofile bundle. Please be patient.  
Done!  
Moving the image bundle to the remote system location rhel6.5-s390x-netboot-  
rh65mlprofile.tgz
```

0

Virtual Server Image Capture – imgexport


Summary Nodes Script ✕

```
Exporting rhel6.5-s390x-netboot-rh65m1profile to nova@9.12.22.218...
Inside /install/imgexport.56447.2kDGVM.
Compressing rhel6.5-s390x-netboot-rh65m1profile bundle. Please be patient.
Done!
Moving the image bundle to the remote system location rhel6.5-s390x-netboot-rh65m1profile.tgz

0
```


i Load a script to run against this node range.

Virtual Machine

 Target node range:

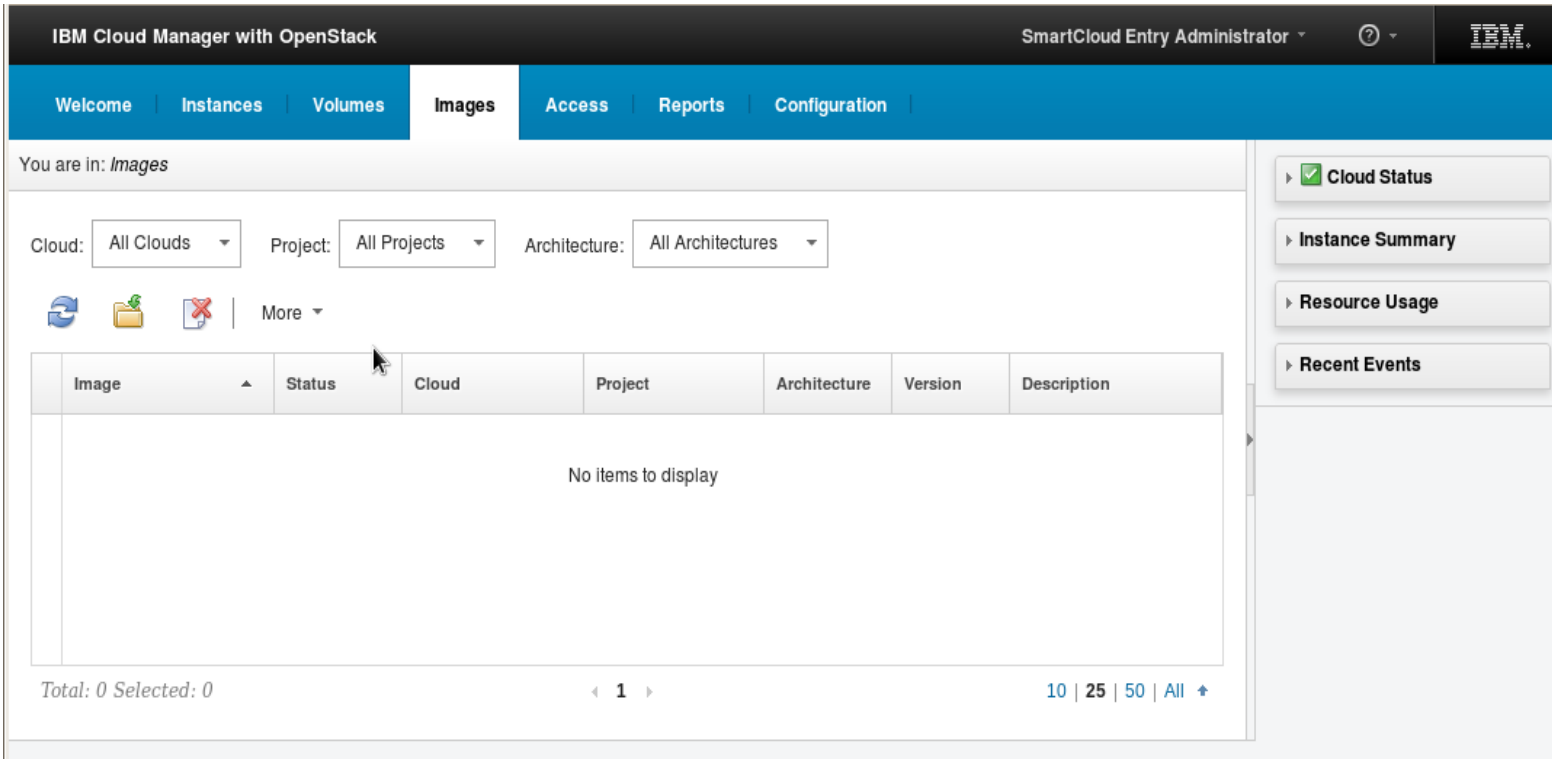
Script

Remote file:

 Script:

```
/opt/xcat/bin/imgexport rhel6.5-s390x-netboot-
rh65m1profile --remotehost nova@9.12.22.218
```

Virtual Server Image Capture – Import Images



IBM Cloud Manager with OpenStack SmartCloud Entry Administrator

Welcome | Instances | Volumes | **Images** | Access | Reports | Configuration

You are in: *Images*

Cloud: All Clouds Project: All Projects Architecture: All Architectures




   | More

Image	Status	Cloud	Project	Architecture	Version	Description
No items to display						

Total: 0 Selected: 0

◀ 1 ▶

10 | 25 | 50 | All +

- Cloud Status
- Instance Summary
- Resource Usage
- Recent Events

Virtual Server Image Capture -

- Format of image import URL

`http://<<xcat ip>>/install/netboot/rhel6.5/s390x/rh65m1profile/0100.img`

Virtual Server Image Capture – Import Details

IBM Cloud Manager with OpenStack SmartCloud Entry Administrator IBM

Welcome | Instances | Volumes | **Images** | Access | Reports | Configuration

You are in: Images > Import Image

Import Image

An image can be imported from an image file or a URL.

Import type:

URL
 File

* Image URL:

* Image name:

* Cloud:

* Project:

* Disk format: ?

* Container format: ?

* Hypervisor type:

Architecture:

* Operating system:

Minimum memory (MB):

Cloud Status
Instance Summary
Resource Usage
Recent Events

Virtual Server Image Capture – Import Details

An image can be imported from an image file or a URL.

Import type:

URL
 File

* Image URL:

* Image name:

* Cloud:

* Project:

* Disk format: ?

* Container format: ?

* Hypervisor type:

Architecture:

* Operating system:

Minimum memory (MB):

Minimum storage (GB):

Instance Summary
Resource Usage
Recent Events

Virtual Server Image Capture - Importing




IBM Cloud Manager with OpenStack SmartCloud Entry Administrator ? IBM


[Welcome](#) | [Instances](#) | [Volumes](#) | **[Images](#)** | [Access](#) | [Reports](#) | [Configuration](#)

Image *ecrhelm1* has been queued for creation. x

You are in: *Images*

Cloud: Project: Architecture:

<input type="checkbox"/>	Image	Status	Cloud	Project	Architecture	Version	Description
<input type="checkbox"/>	ecrhelm1	 Importing	9.12.22.218	Public	z		Image created for an imported image ecrhelm1 started on 4/2/15 10:19 PM.

Total: 1 Selected: 0 10 | 25 | 50 | All


Cloud Status

Instance Summary

Resource Usage

Recent Events

Virtual Server Image Capture - Imported




IBM Cloud Manager with OpenStack SmartCloud Entry Administrator ? 

[Welcome](#) | [Instances](#) | [Volumes](#) | **[Images](#)** | [Access](#) | [Reports](#) | [Configuration](#)

Image *ecrhelm1* has been queued for creation. X

You are in: *Images*

Cloud: |
 Project: |
 Architecture:



 |
 More ▾

<input type="checkbox"/>	Image ▲	Status	Cloud	Project	Architecture	Version	Description
<input type="checkbox"/>	ecrhelm1	<input checked="" type="checkbox"/> OK	9.12.22.218	Public	z		Image created for an imported image ecrhelm1 started on 4/2/15 10:19 PM.

Total: 1 Selected: 0 ◀ 1 ▶ 10 | 25 | 50 | All ↑

Cloud Status

Instance Summary

Resource Usage

Recent Events

ICM Session Agenda

- ❑ IBM Cloud Manager and OpenStack
- ❑ Architecture on z Systems
- ❑ Installation and Customization
 - ❑ DMSSICNF and DMSSICMO
 - ❑ Appliance
- ❑ Virtual Server Requirements
- ❑ Virtual Server Image Capture
- **Virtual Server Deployment**
- ❑ SMTP Notifications
- ❑ LDAP Authentication

- ❑ Chef Server, Client, Recipes
- ❑ Resources and References

Installation & Customization – Flavors

- Default flavors
- Defined/modified via Web UI or command line
- Plan to define your own flavors

```
[ryoung@localhost ~]$ ssh mnadmin@9.12.22.218
mnadmin@9.12.22.218's password:
Last login: Thu Apr  2 13:27:48 2015 from 172.110.150.1
[mnadmin@xcat1 ~] $ source openrc
[mnadmin@xcat1 ~] $ nova flavor-list
```

ID	Name	Memory_MB	Disk	Ephemeral	Swap	VCPUs	RXTX_Factor	Is_Public
1	m1.tiny	512	1	0		1	1.0	True
2	m1.small	2048	20	0		1	1.0	True
3	m1.medium	4096	40	0		2	1.0	True
4	m1.large	8192	80	0		4	1.0	True
5	m1.xlarge	16384	160	0		8	1.0	True




Installation & Customization – Flavors

Name: 9.12.22.218
Description: *No data provided*
Type: OpenStack
Region: zCloud
Host name: 9.12.22.218
Port: 5671
 Secure the cloud connection using SSL

Cloud timeout (minutes): 1
Security certificate: Trusted [Remove...](#)

Message Queue Settings
User ID: qpclient
Message queue type: QPID
Virtual host: *No data provided*

Flavors: 5

<input type="checkbox"/>	Name	Virtual CPUs	Memory (MB)	Storage (GB) ▲	Swap (MB)
<input type="checkbox"/>	m1.tiny	1	512	1	0
<input type="checkbox"/>	m1.small	1	2,048	20	0
<input type="checkbox"/>	m1.medium	2	4,096	40	0
<input type="checkbox"/>	m1.large	4	8,192	80	0
<input type="checkbox"/>	m1.xlarge	8	16,384	160	0

Total: 5 Selected: 0 < 1 > 10 | 25 | 50 | All ▲

▶ **Expiration Policies:** Disabled

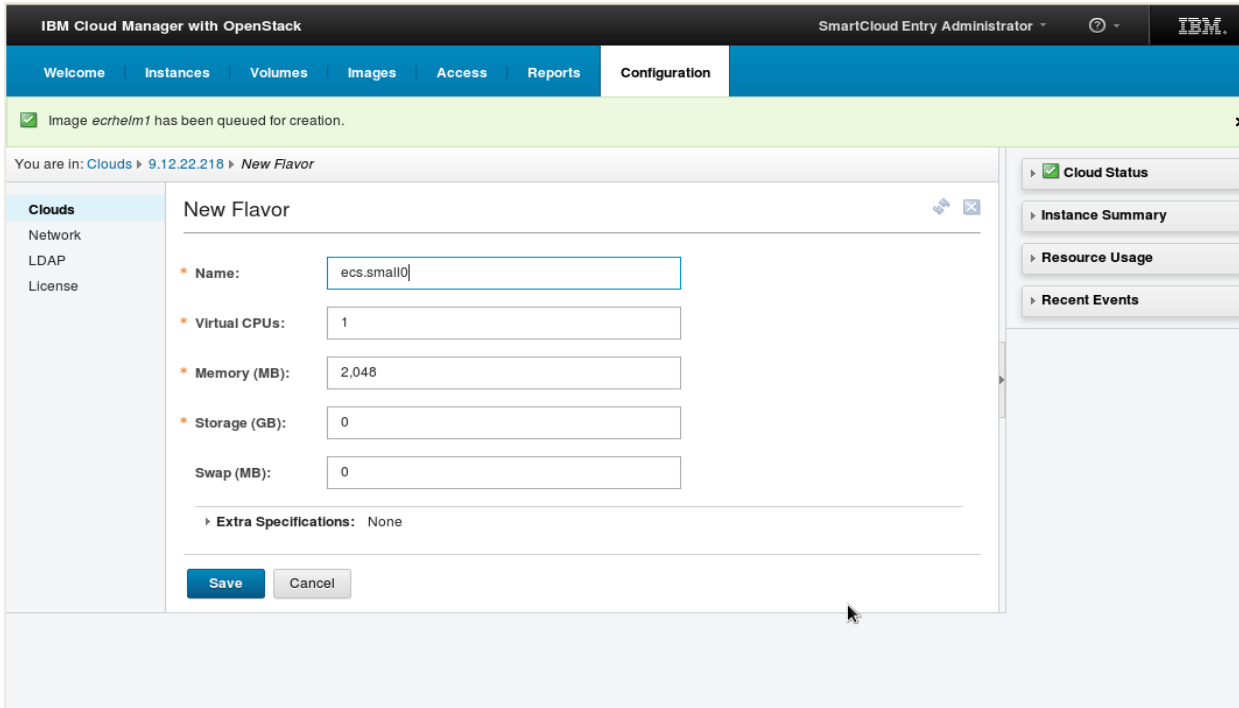
▶ **Approval Policies:** Disabled

Flavor information available both via command interface and ICM UI

Must enable “edit” on the top of the page before the flavors can be modified

Installation & Customization – Flavors

- Flavor definition from ICM Web UI



The screenshot shows the IBM Cloud Manager web interface. The top navigation bar includes 'Welcome', 'Instances', 'Volumes', 'Images', 'Access', 'Reports', and 'Configuration'. A notification banner at the top states: 'Image *ecrhelm1* has been queued for creation.' The main content area is titled 'New Flavor' and contains the following fields:

- Name:**
- Virtual CPUs:**
- Memory (MB):**
- Storage (GB):**
- Swap (MB):**

Below these fields is a section for 'Extra Specifications' set to 'None'. At the bottom of the form are 'Save' and 'Cancel' buttons. On the right side of the interface, there is a sidebar with expandable sections: 'Cloud Status' (checked), 'Instance Summary', 'Resource Usage', and 'Recent Events'. A left-hand navigation menu lists 'Clouds', 'Network', 'LDAP', and 'License'.

Installation & Customization – Flavors

- ❑ Flavors defined in ICM UI are accessible via OpenStack CLI

```
[mnadmin@xcat1 ~] $ nova flavor-list
```

ID	Name	Memory_MB	Disk	Ephemeral	Swap	VCPUs	RXTX_Factor	Is_Public
1	m1.tiny	512	1	0		1	1.0	True
2	m1.small	2048	20	0		1	1.0	True
3	m1.medium	4096	40	0		2	1.0	True
4	m1.large	8192	80	0		4	1.0	True
5	m1.xlarge	16384	160	0		8	1.0	True
942605d2-12a6-4427-bc49-2374f3f1c1d3	ecs.small10	2048	0	0		1	1.0	True

```
[mnadmin@xcat1 ~] $
```

Installation & Customization – Flavors

```
[mnadmin@xcat1 ~] $ nova flavor-list
```

ID	Name	Memory_MB	Disk	Ephemeral	Swap	VCPUs	RXTX_Factor	Is_Public
1	m1.tiny	512	1	0		1	1.0	True
2	m1.small	2048	20	0		1	1.0	True
3	m1.medium	4096	40	0		2	1.0	True
4	m1.large	8192	80	0		4	1.0	True
5	m1.xlarge	16384	160	0		8	1.0	True
942605d2-12a6-4427-bc49-2374f3f1c1d3	ecs.small10	2048	0	0		1	1.0	True

```
[mnadmin@xcat1 ~] $
```

```
[mnadmin@xcat1 ~] $ nova flavor-create ecs.medium0 7 4096 0 2
```

ID	Name	Memory_MB	Disk	Ephemeral	Swap	VCPUs	RXTX_Factor	Is_Public
7	ecs.medium0	4096	0	0		2	1.0	True

```
[mnadmin@xcat1 ~] $ nova flavor-list
```

ID	Name	Memory_MB	Disk	Ephemeral	Swap	VCPUs	RXTX_Factor	Is_Public
1	m1.tiny	512	1	0		1	1.0	True
2	m1.small	2048	20	0		1	1.0	True
3	m1.medium	4096	40	0		2	1.0	True
4	m1.large	8192	80	0		4	1.0	True
5	m1.xlarge	16384	160	0		8	1.0	True
7	ecs.medium0	4096	0	0		2	1.0	True
942605d2-12a6-4427-bc49-2374f3f1c1d3	ecs.small10	2048	0	0		1	1.0	True

```
[mnadmin@xcat1 ~] $
```



Imported Image

IBM Cloud Manager with OpenStack
SmartCloud Entry Administrator

Welcome | Instances | Volumes | Images | Access | Reports | Configuration

✔ Cloud configuration 9.12.22.218 saved successfully.

You are in: [Images](#) > [ecrhelm1](#)



ecrhelm1

Status: ✔ OK

🔍 ✖

▶ Deploy
⚙️ Configure
✎ Edit
📄 Copy
More ▾

Name:	ecrhelm1
Description:	Image created for an imported image ecrhelm1 started on 4/2/15 10:19 PM.
UUID:	d6d4889a-22d2-4535-b9ff-df26ccbc0793
Cloud:	9.12.22.218
Project:	Public
Disk format: ?	RAW
Container format: ?	BARE
Minimum memory (MB):	1024
Minimum storage (GB):	0
Base image:	Yes
Owner:	System
Last modified:	Today 10:20 PM
Version:	<i>No data provided</i>
Revision:	<i>No data provided</i>
Revision comments:	<i>No data provided</i>

▶ **Additional Properties:** 7

▶ **Related Images:** None

▶ **Log Entries:** None


▶ ✔ Cloud Status

▶ Instance Summary

▶ Resource Usage

▶ Recent Events

Deploy – Predeploy state


Nodes
Configure
Provision
Help
admin | Settings | Log out

Groups

- all
- hosts

+ Add node

Summary
Nodes

ⓘ Double-click on a cell to edit a node's properties. Click outside the table to save changes. Hit the Escape key to ignore changes.







Actions ▾

Configuration ▾

Provision ▾


Search:

Refresh

	node	status	power	monitor	comments	arch	groups	hcp	h
<input type="checkbox"/>	ecrhelm1					s390x	all	zhcp1.ecs.ibm.com	ecrhelr
<input type="checkbox"/>	xcat1					s390x	all	zhcp1.ecs.ibm.com	xcat1
<input type="checkbox"/>	zhcp1					s390x	all	zhcp1.ecs.ibm.com	zhcp:
<input type="checkbox"/>	zhcp2	noping				s390x	all	zhcp2.ecs.ibm.com	zhcp:
<input type="checkbox"/>	zhcp3	noping				s390x	all	zhcp3.ecs.ibm.com	zhcp:
<input type="checkbox"/>	zhcp4	noping				s390x	all	zhcp4.ecs.ibm.com	zhcp:

Showing 1 to 6 of 6 entries

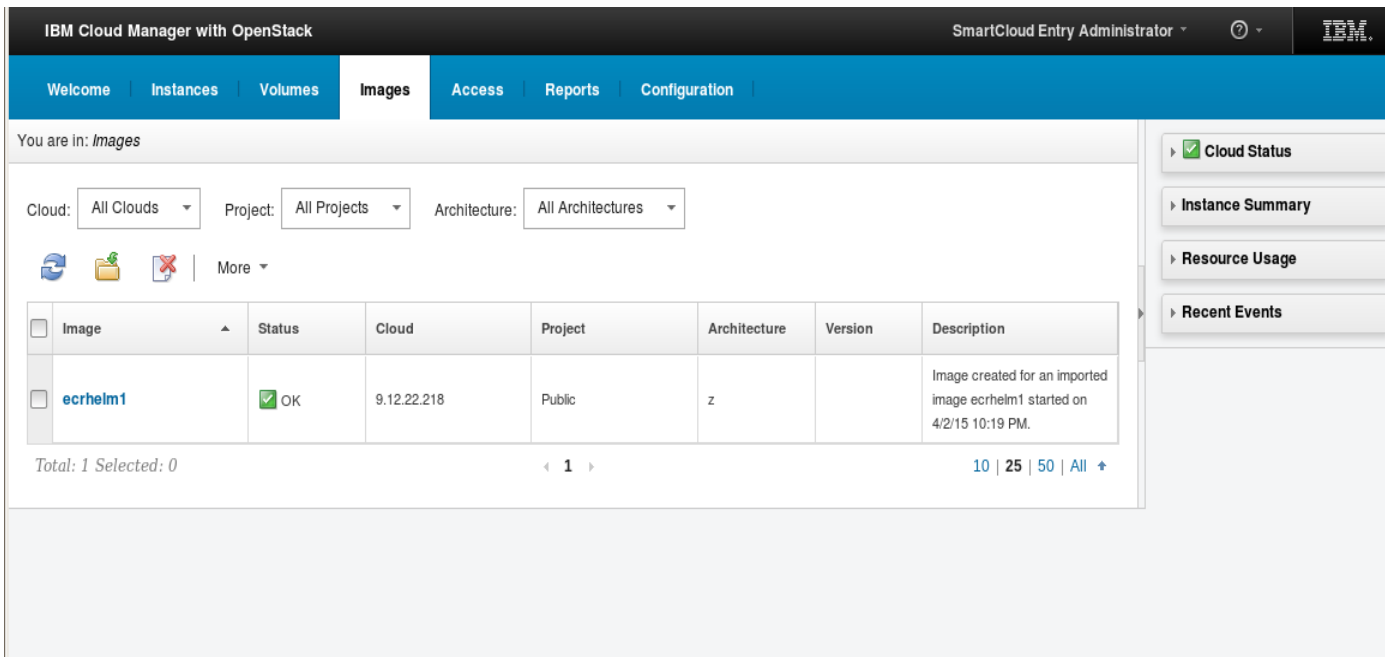
Complete your session evaluations online at www.SHARE.org/Orlando-Eval



66

Deploy – Select image to be deploy

- Double click on image you want to deploy



The screenshot shows the IBM Cloud Manager with OpenStack interface. The top navigation bar includes "Welcome", "Instances", "Volumes", "Images" (selected), "Access", "Reports", and "Configuration". The main content area displays a table of images with the following columns: Image, Status, Cloud, Project, Architecture, Version, and Description. A single image, "ecrhelm1", is listed with a status of "OK". The interface also includes filter dropdowns for Cloud, Project, and Architecture, and a sidebar with options like "Cloud Status", "Instance Summary", "Resource Usage", and "Recent Events".


Image	Status	Cloud	Project	Architecture	Version	Description
<input type="checkbox"/> ecrhelm1	<input checked="" type="checkbox"/> OK	9.12.22.218	Public	z		Image created for an imported image ecrhelm1 started on 4/2/15 10:19 PM.

Deployment

IBM Cloud Manager with OpenStack SmartCloud Entry Administrator ? ? IBM

Welcome | Instances | Volumes | **Images** | Access | Reports | Configuration

You are in: Images > ecrhelm1

 **ecrhelm1**
Status: ✔ OK

▶ Deploy ⚙️ Configure ✎ Edit 📄 Copy | More ▾

Name:	ecrhelm1
Description:	Image created for an imported image ecrhelm1 started on 4/2/15 10:19 PM.
UUID:	d6d4889a-22d2-4535-b9ff-df26ccbc0793
Cloud:	9.12.22.218
Project:	Public
Disk format: ?	RAW
Container format: ?	BARE
Minimum memory (MB):	1024
Minimum storage (GB):	0
Base image:	Yes
Owner:	System
Last modified:	Yesterday 11:12 PM
Version:	No data provided
Revision:	No data provided
Revision comments:	No data provided

▶ **Additional Properties:** 8

▶ **Related Images:** None

▶ **Log Entries:** None

Close

▶ Cloud Status

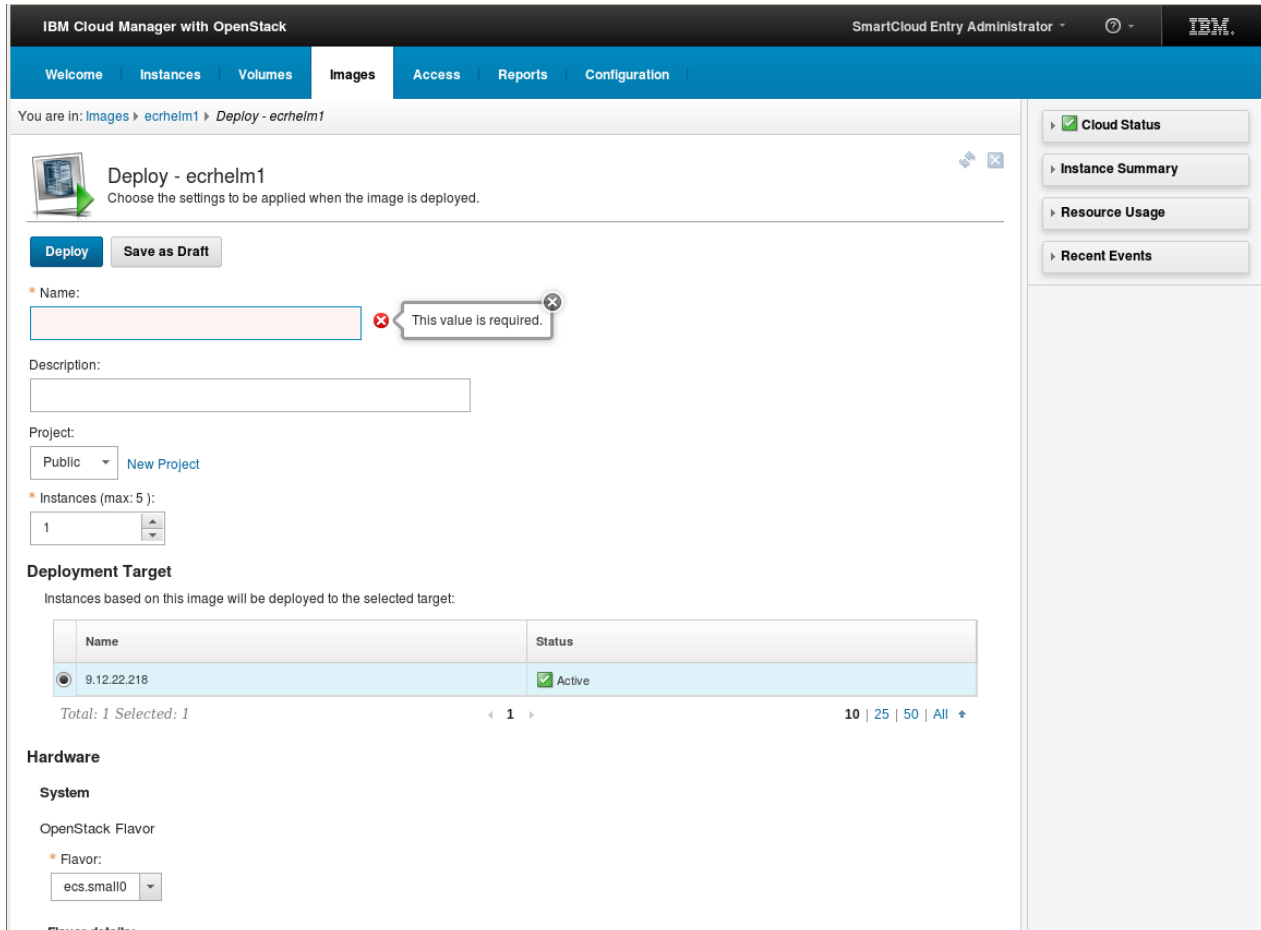
▶ Instance Summary

▶ Resource Usage

▶ Recent Events

Either use
“Deploy” button
or “Advanced
Deploy” under
“More” button

Deployment



The screenshot shows the 'Deploy - ecrhelm1' configuration page in IBM Cloud Manager. The page includes a breadcrumb trail: 'You are in: Images > ecrhelm1 > Deploy - ecrhelm1'. The main content area has a title 'Deploy - ecrhelm1' and a subtitle 'Choose the settings to be applied when the image is deployed.' Below this are 'Deploy' and 'Save as Draft' buttons. The 'Name' field is empty and has a red error message: 'This value is required.' The 'Description' field is also empty. The 'Project' dropdown is set to 'Public' with a 'New Project' link. The 'Instances (max: 5)' spinner is set to '1'. Under 'Deployment Target', a table shows one selected target with ID '9.12.22.218' and status 'Active'. The 'Hardware' section includes a 'System' subsection with an 'OpenStack Flavor' dropdown set to 'ecs.small0'.

- Name used here will NOT be guest name.
- Guest name is a prefix with an increment suffix
- Select the desired flavor and network(s)

Deployment

Enter the contents of personality file 2:

Enter the target path and file name for personality file 3:

Enter the contents of personality file 3:

Enter the target path and file name for personality file 4:

Enter the contents of personality file 4:



Enter the target path and file name for personality file 5:

Enter the contents of personality file 5:

Network

System

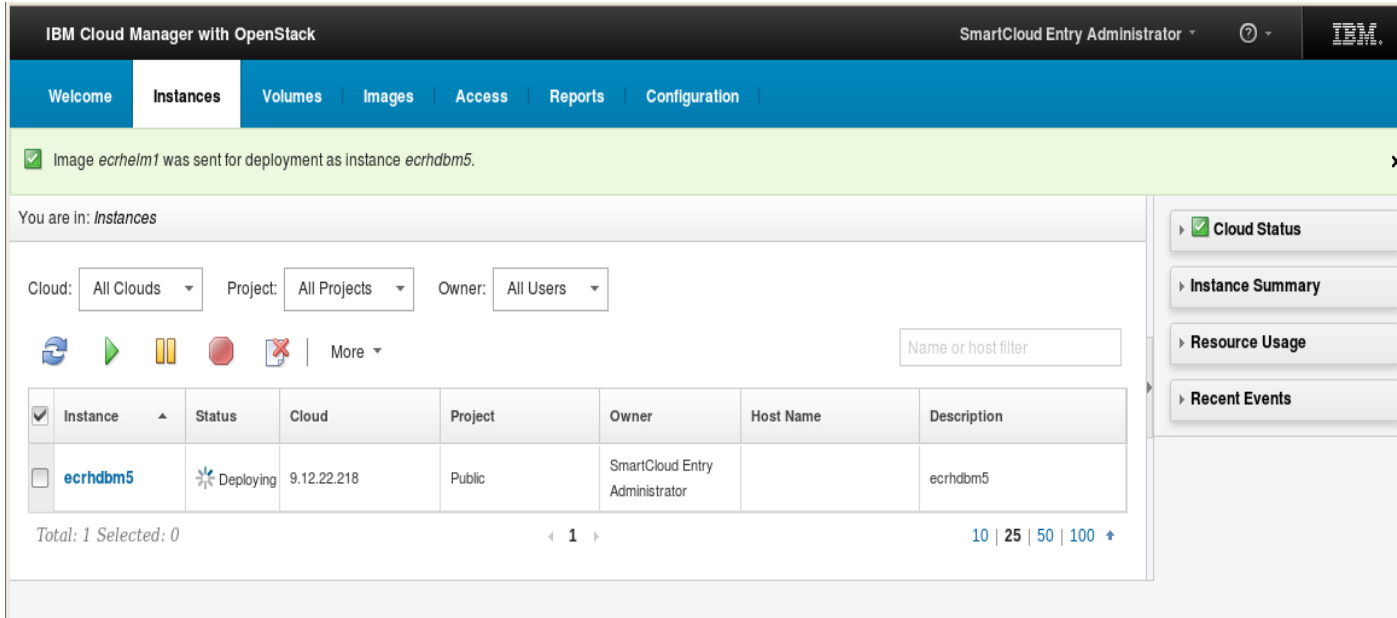
* Network adapters

<input type="checkbox"/> Adapter Number	Network Configuration
<input type="checkbox"/> 1	mgmtnet (172.110.150.20 - 172.110.150.45) ▼

- You can add additional network adapters
- Select the desired subnet range

Deploy – Deployment in Progress



IBM Cloud Manager with OpenStack SmartCloud Entry Administrator

Navigation: Welcome | **Instances** | Volumes | Images | Access | Reports | Configuration

Message: Image *ecrhelm1* was sent for deployment as instance *ecrhdbm5*.

You are in: *Instances*

Cloud: All Clouds | Project: All Projects | Owner: All Users

Refresh | Play | Stop | Stop | Stop | More

Name or host filter

<input checked="" type="checkbox"/>	Instance	Status	Cloud	Project	Owner	Host Name	Description
<input type="checkbox"/>	ecrhdbm5	Deploying	9.12.22.218	Public	SmartCloud Entry Administrator		ecrhdbm5

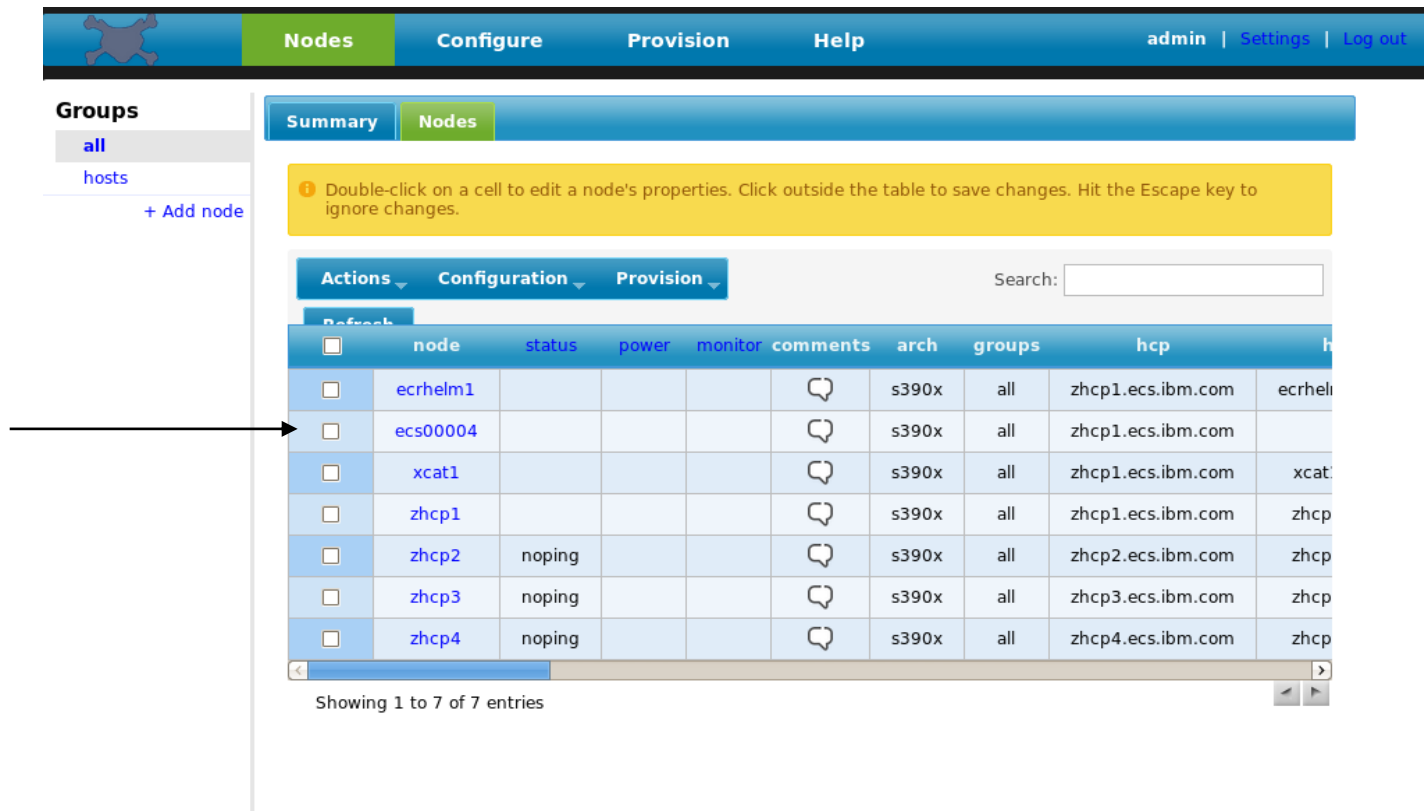
Total: 1 Selected: 0

10 | 25 | 50 | 100

Cloud Status | Instance Summary | Resource Usage | Recent Events

When you submit your deployment you are taken to the instances screen where you can track the progress (Click refresh button)

Deploy – Deployment in Progress

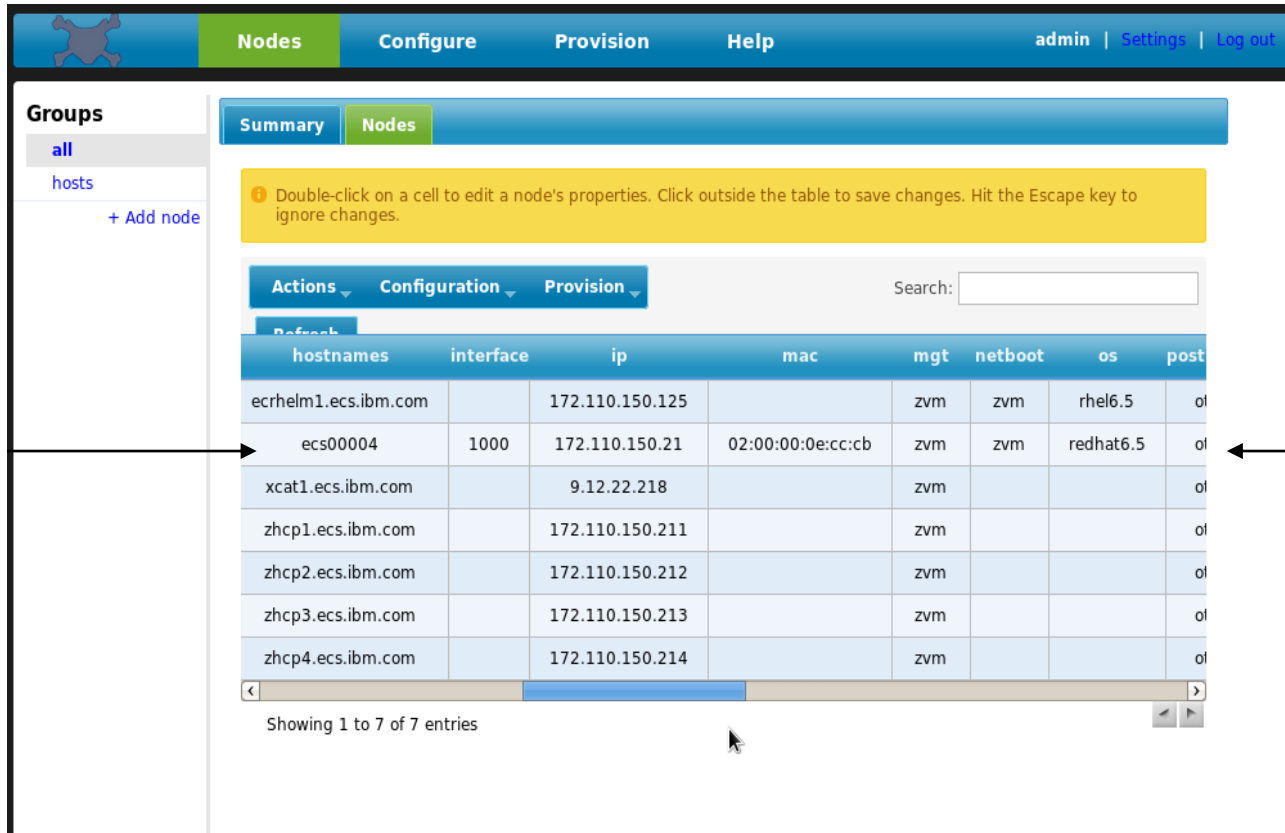


The screenshot shows the xCAT web interface. At the top, there is a navigation bar with tabs for 'Nodes', 'Configure', 'Provision', and 'Help'. The 'Nodes' tab is active. On the left, there is a 'Groups' sidebar with 'all' and 'hosts' options, and a '+ Add node' button. The main content area has a 'Summary' and 'Nodes' sub-tab. A yellow message box at the top of the main area says: 'Double-click on a cell to edit a node's properties. Click outside the table to save changes. Hit the Escape key to ignore changes.' Below this is a table of nodes with columns: Actions, Configuration, Provision, Refresh, node, status, power, monitor, comments, arch, groups, hcp, and host. The table contains 7 entries. A black arrow points to the 'ecs00004' node. At the bottom of the table, it says 'Showing 1 to 7 of 7 entries'.

Actions	Configuration	Provision	Refresh	node	status	power	monitor	comments	arch	groups	hcp	host
<input type="checkbox"/>				ecrhelm1					s390x	all	zhcp1.ecs.ibm.com	ecrhelm1
<input type="checkbox"/>				ecs00004					s390x	all	zhcp1.ecs.ibm.com	
<input type="checkbox"/>				xcat1					s390x	all	zhcp1.ecs.ibm.com	xcat1
<input type="checkbox"/>				zhcp1					s390x	all	zhcp1.ecs.ibm.com	zhcp1
<input type="checkbox"/>				zhcp2	noping				s390x	all	zhcp2.ecs.ibm.com	zhcp2
<input type="checkbox"/>				zhcp3	noping				s390x	all	zhcp3.ecs.ibm.com	zhcp3
<input type="checkbox"/>				zhcp4	noping				s390x	all	zhcp4.ecs.ibm.com	zhcp4

When a directory entry is created you can see the new guest in the xCAT UI

Deploy – Deployment in Progress



Nodes | Configure | Provision | Help | admin | Settings | Log out

Groups
all
hosts
+ Add node

Summary | Nodes

Double-click on a cell to edit a node's properties. Click outside the table to save changes. Hit the Escape key to ignore changes.

Actions Configuration Provision Search:

hostnames	interface	ip	mac	mgt	netboot	os	post
ecrhelm1.ecs.ibm.com		172.110.150.125		zvm	zvm	rhel6.5	ol
ecs00004	1000	172.110.150.21	02:00:00:0e:cc:cb	zvm	zvm	redhat6.5	ol
xcat1.ecs.ibm.com		9.12.22.218		zvm			ol
zhcp1.ecs.ibm.com		172.110.150.211		zvm			ol
zhcp2.ecs.ibm.com		172.110.150.212		zvm			ol
zhcp3.ecs.ibm.com		172.110.150.213		zvm			ol
zhcp4.ecs.ibm.com		172.110.150.214		zvm			ol

Showing 1 to 7 of 7 entries

You can see the IP and MAC details once the guest is started, before that the disk image is being installed

Deploy – Deployment in Progress

```

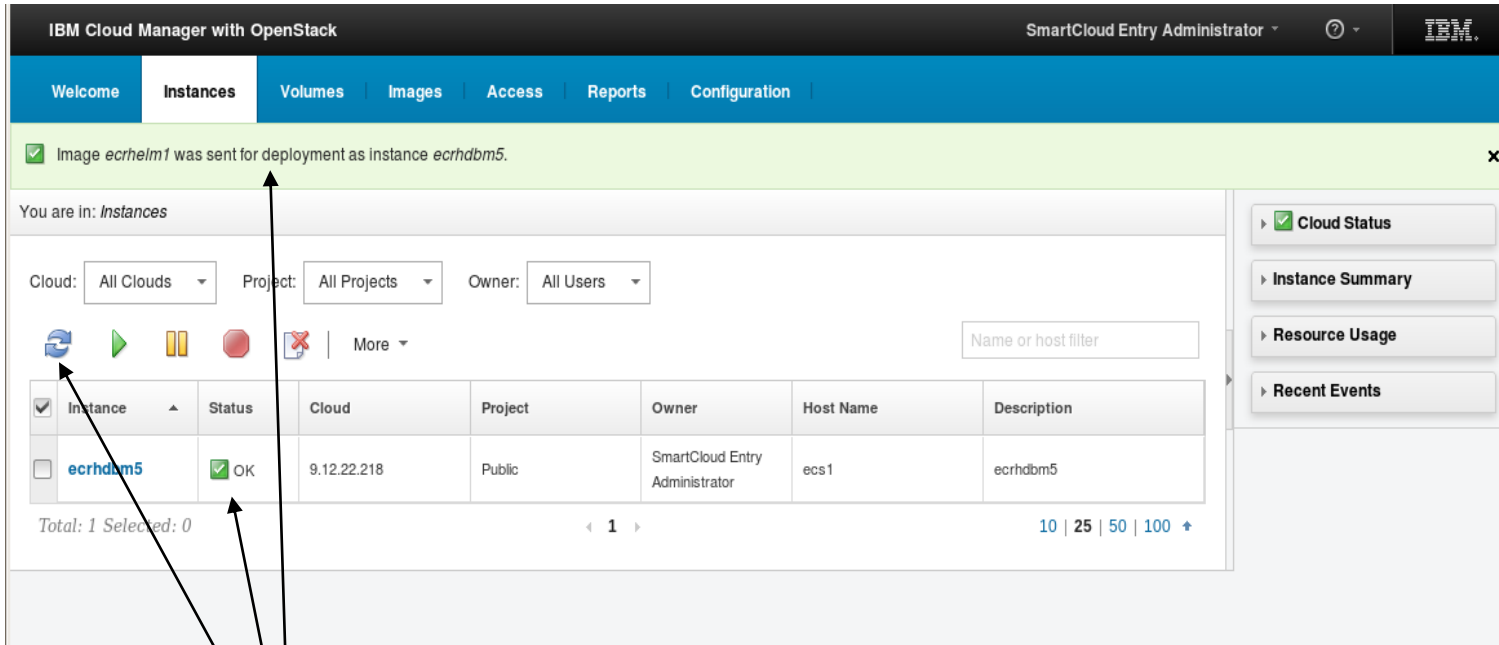
q ecs00004
HCPCQU045E ECS00004 not logged on
Ready(00045); T=0.01/0.01 19:52:47
rac lu ecs00004
USER=ECS00004 NAME=UNKNOWN OWNER=DIRMAINT CREATED=15.093
DEFAULT-GROUP=LINUX PASSDATE=00.000 PASS-INTERVAL=254 PHRASEDATE=N/A
ATTRIBUTES=NONE
REVOKE DATE=NONE RESUME DATE=NONE
LAST-ACCESS=UNKNOWN
CLASS AUTHORIZATIONS=NONE
NO-INSTALLATION-DATA
NO-MODEL-NAME
LOGON ALLOWED (DAYS) (TIME)
-----
ANYDAY ANYTIME
GROUP=SYS1 AUTH=USE CONNECT-OWNER=DIRMAINT CONNECT-DATE=15.093
CONNECTS= 00 UACC=NONE LAST-CONNECT=UNKNOWN
CONNECT ATTRIBUTES=NONE
REVOKE DATE=NONE RESUME DATE=NONE
GROUP=LINUX AUTH=USE CONNECT-OWNER=DIRMAINT CONNECT-DATE=15.093
CONNECTS= 00 UACC=NONE LAST-CONNECT=UNKNOWN
CONNECT ATTRIBUTES=NONE
REVOKE DATE=NONE RESUME DATE=NONE
SECURITY-LEVEL=NONE SPECIFIED
CATEGORY-AUTHORIZATION
NONE SPECIFIED
SECURITY-LABEL=NONE SPECIFIED
Ready; T=0.01/0.01 19:53:12
  
```

You can use the DVHXUN user exit to assign a RACF group to a given guest name prefix.

In my example, that is how I grant access to the proper virtual switch

ICM, ICO, Wave have no direct RACF integration

Deploy – Deployment Complete

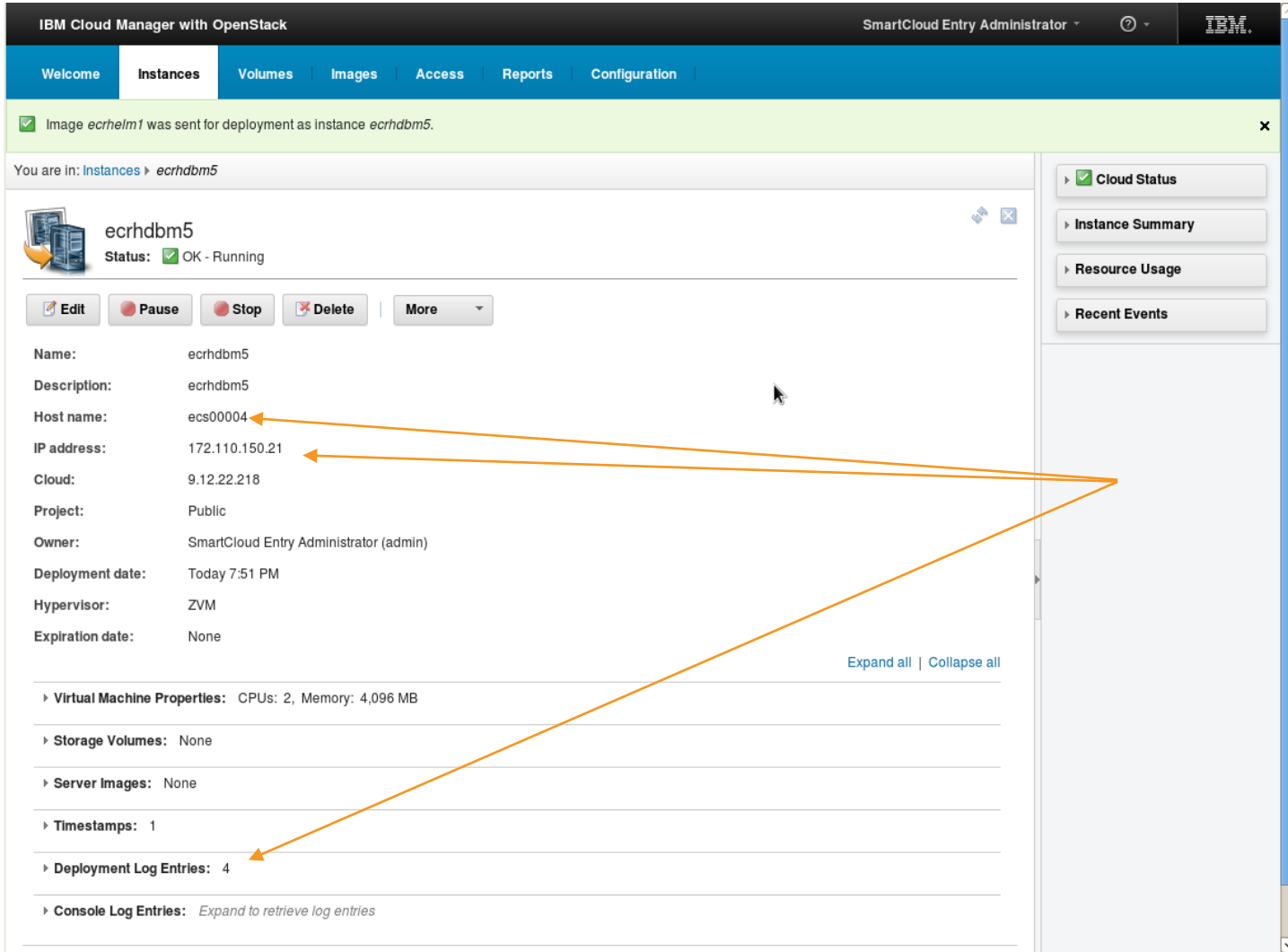


The screenshot shows the IBM Cloud Manager with OpenStack interface. The top navigation bar includes 'Welcome', 'Instances', 'Volumes', 'Images', 'Access', 'Reports', and 'Configuration'. A green notification banner at the top states: 'Image ecrhelm1 was sent for deployment as instance ecrhdbm5.' Below this, the 'Instances' page is displayed. The breadcrumb 'You are in: Instances' is visible. Filter options for 'Cloud', 'Project', and 'Owner' are set to 'All Clouds', 'All Projects', and 'All Users' respectively. A toolbar contains icons for refresh, play, list, stop, and delete, along with a 'More' dropdown and a 'Name or host filter' input field. A table lists instances with columns for Instance, Status, Cloud, Project, Owner, Host Name, and Description. The table contains one entry: 'ecrhdbm5' with a status of 'OK'. A right-hand sidebar contains expandable sections for 'Cloud Status', 'Instance Summary', 'Resource Usage', and 'Recent Events'. At the bottom of the table, it shows 'Total: 1 Selected: 0' and pagination options '10 | 25 | 50 | 100'. Three arrows point from the text below to the refresh icon, the 'OK' status, and the notification banner.

Instance	Status	Cloud	Project	Owner	Host Name	Description
<input checked="" type="checkbox"/> ecrhdbm5	OK	9.12.22.218	Public	SmartCloud Entry Administrator	ecs1	ecrhdbm5

- ICM does not autorefresh the instance page.
- When you deployment is finished it should look similar to what you see here

Deploy – Deployment Complete



IBM Cloud Manager with OpenStack SmartCloud Entry Administrator

Welcome Instances Volumes Images Access Reports Configuration

Image *ecrhelm1* was sent for deployment as instance *ecrhdbm5*.

You are in: Instances > *ecrhdbm5*

ecrhdbm5
Status: ✔ OK - Running

[Edit](#) [Pause](#) [Stop](#) [Delete](#) [More](#)

Name: ecrhdbm5
Description: ecrhdbm5
Host name: ecs00004
IP address: 172.110.150.21
Cloud: 9.12.22.218
Project: Public
Owner: SmartCloud Entry Administrator (admin)
Deployment date: Today 7:51 PM
Hypervisor: ZVM
Expiration date: None

[Expand all](#) | [Collapse all](#)

- Virtual Machine Properties: CPUs: 2, Memory: 4,096 MB
- Storage Volumes: None
- Server Images: None
- Timestamps: 1
- Deployment Log Entries: 4
- Console Log Entries: [Expand to retrieve log entries](#)

Cloud Status
Instance Summary
Resource Usage
Recent Events

Deploy – Deployment Complete

Disk Config	MANUAL	
Host	ecs1	
Host ID	ef580f0aa29b63458e92370d140ef0693041dfd781de0a48a953a529	
Hypervisor Hostname	ECS1	
Hypervisor Type	zvm	
Instance Name	ecs00004	
Power State	Running	
Progress	0	
Status	Active	
Task State	None	
Updated	Friday, April 3, 2015 11:54:10 PM GMT	
User ID	ae64606ae4104d1a921553e1dd736e6e	

▶ **Storage Volumes:** None

▶ **Server Images:** None

▼ **Timestamps:** 1

Instance	Started	Completed	Deploy Time	Uptime
ecrddb5	Today 7:51 PM	Today 7:54 PM	00:03:05	00:00:32

Total: 1 < 1 > 10 | 25 | 50 +

▼ **Deployment Log Entries:** 4

```
CYX61681: [OpenStack] 2015-04-03 23:51:06.319737 Deployment started
CYX61671: [OpenStack] 2015-04-03 23:51:07.482576 Virtual Machine state : Block Device Mapping
CYX61671: [OpenStack] 2015-04-03 23:51:07.651278 Virtual Machine state : Spawning
CYX61681: [OpenStack] 2015-04-03 23:54:10.780869 Deployment successful
```

▶ **Console Log Entries:** *Expand to retrieve log entries*

Deployment log reports completion in about 3 minutes

Deploy – Deployment Complete – OS CLI Details

```
[mnadmin@xcat1 nova] $ nova list --all-tenants
```

ID	Name	Status	Task State	Power State	Networks
87535582-063c-4256-895b-fc16135b9352	ecrhdbm5	ACTIVE	-	Running	mgmtnet=172.110.150.21

```
[mnadmin@xcat1 nova] $ nova show 87535582-063c-4256-895b-fc16135b9352
```

Property	Value
OS-DCF:diskConfig	MANUAL
OS-EXT-AZ:availability_zone	nova
OS-EXT-SRV-ATTR:host	ecs1
OS-EXT-SRV-ATTR:hypervisor_hostname	ECS1
OS-EXT-SRV-ATTR:instance_name	ecs00004
OS-EXT-STS:power_state	1
OS-EXT-STS:task_state	-
OS-EXT-STS:vm_state	active
OS-SRV-USG:launched_at	2015-04-03T23:54:10.000000
OS-SRV-USG:terminated_at	-
accessIPv4	
accessIPv6	
config_drive	True
created	2015-04-03T23:51:05Z
flavor	ecs.medium0 (7)
hostId	ef580f0aa29b63458e92370d140ef0693041dfd781de0a48a953a529
id	87535582-063c-4256-895b-fc16135b9352
image	ecrhelm1 (d6d4889a-22d2-4535-b9ff-df26ccbc0793)
key_name	-
metadata	{"dsmode": "local", "description": "ecrhdbm5"}
mgmtnet network	172.110.150.21
name	ecrhdbm5
os-extended-volumes:volumes_attached	[]
progress	0
security_groups	default
status	ACTIVE
tenant_id	a473b51628ad40b9a739be3a08957ca9
user_id	ae64606ae4104d1a921553e1dd736e6e

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

ICM Session Agenda

- ❑ IBM Cloud Manager and OpenStack
- ❑ Architecture on z Systems
- ❑ Installation and Customization
 - ❑ DMSSICNF and DMSSICMO
 - ❑ Appliance
- ❑ Virtual Server Requirements
- ❑ Virtual Server Image Capture
- ❑ Virtual Server Deployment
- **SMTP Notifications**
- ❑ LDAP Authentication

- ❑ Chef Server, Client, Recipes
- ❑ Resources and References

ICM Appliance Notification

- Email notifications possible via SMTP
- General distinction between admins and users
- Update email address for the default “admin” userid
- Notifications sent for a variety of conditions
 - Deployment start
 - Deployment succeeded or failed
 - LDAP user logged in the first time (auto registered)

ICM appliance email notification setup

- ssh to virtual appliance
 - sudo vi /data/sce/
 - Enter SMTP server IP and port
 - Validate TCPIP connectivity
 - Restart appliance
-
- Emails notifications for events such as:
 - New LDAP User
 - Virtual Server Start
 - Deployment Completed

ICM Session Agenda

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- ❑ Virtual Server Deployment
- ❑ SMTP Notifications
- **LDAP Authentication**

- ❑ Chef Server, Client, Recipes
- ❑ Resources and References

ICM Directory Configuration

- LDAP directory configuration
 - Support for users and administrators
 - Provisions for anonymous and authenticated directory searches
 - Configuration directly against the ldap.xml is deprecated
 - Preferred method of configuration is the web UI
 - All features can NOT be configured via the Web UI
-
- ssh in to the virtual appliance
 - sudo vi /data/sce/ldap.xml

ICM Directory Configuration

```
sudo vi /data/sce/ldap.xml
```

```
<?xml version="1.0" encoding="UTF-8"?><config>  
  <host>ldap://192.168.4.10:389</host>  
  <userNameCaseSensitive>>true</userNameCaseSensitive>  
  <enableSecureConnection>>false</enableSecureConnection>  
  <step>  
    <searchFilter>(|(notesShortName={FILTER}))</searchFilter>  
    <searchContext>ou=bluepages,o=ibm.com</searchContext>  
    <outputs>  
      <output attribute="email">  
        <get>mail</get>  
      </output>  
      <output attribute="fullname">  
        <get>callupname</get>  
      </output>  
      <output attribute="shortname">  
        <get>notesShortName</get>  
      </output>  
    </outputs>  
  </step>  
  <step>  
    <authDN>{PERSON_DN}</authDN>  
  </step>  
</config>
```

ICM Agenda

- ❑ IBM Cloud Manager and OpenStack
- ❑ Architecture on z Systems
- ❑ Installation and Customization
 - ❑ DMSSICNF and DMSSICMO
 - ❑ Appliance
- ❑ Virtual Server Requirements
- ❑ Virtual Server Image Capture
- ❑ Virtual Server Deployment
- ❑ SMTP Notifications
- ❑ LDAP Authentication
- **Cinder**

- ❑ Chef Server, Client, Recipes
- ❑ Resources and References

Cinder

- ❑ Cinder can eliminate the need to go to a storage administrator for every LUN requested and save days in the server provisioning process
- ❑ For Linux on z, cinder can automatically define and authorize guest access to LUNs in a Storewise V7000 storage pool (predefined)
- ❑ These LUN definitions are independent of any guest allocation when created
- ❑ Defined LUNs can be attached/detach to/from guests
- ❑ Cinder defined LUNs can be expanded as needed
- ❑ LUNs made available via DEDICATED FCP devices are NOT EDEVs
- ❑ It uses FCP devices from a pool defined in DMSSICMO
- ❑ Additional information in DMSSICMO is copied to /etc/cinder/cinder.conf
- ❑ NPIV SAN switch zoning must still be performed manually, but that can be a one time up front effort independent of individual server allocations

Cinder

- ❑ Sample DMSSICMO with Cinder information included
- ❑ Public/private key pair are RSA keys not DSA or ECSDA
- ❑ Private key in the home directory of mnadmin

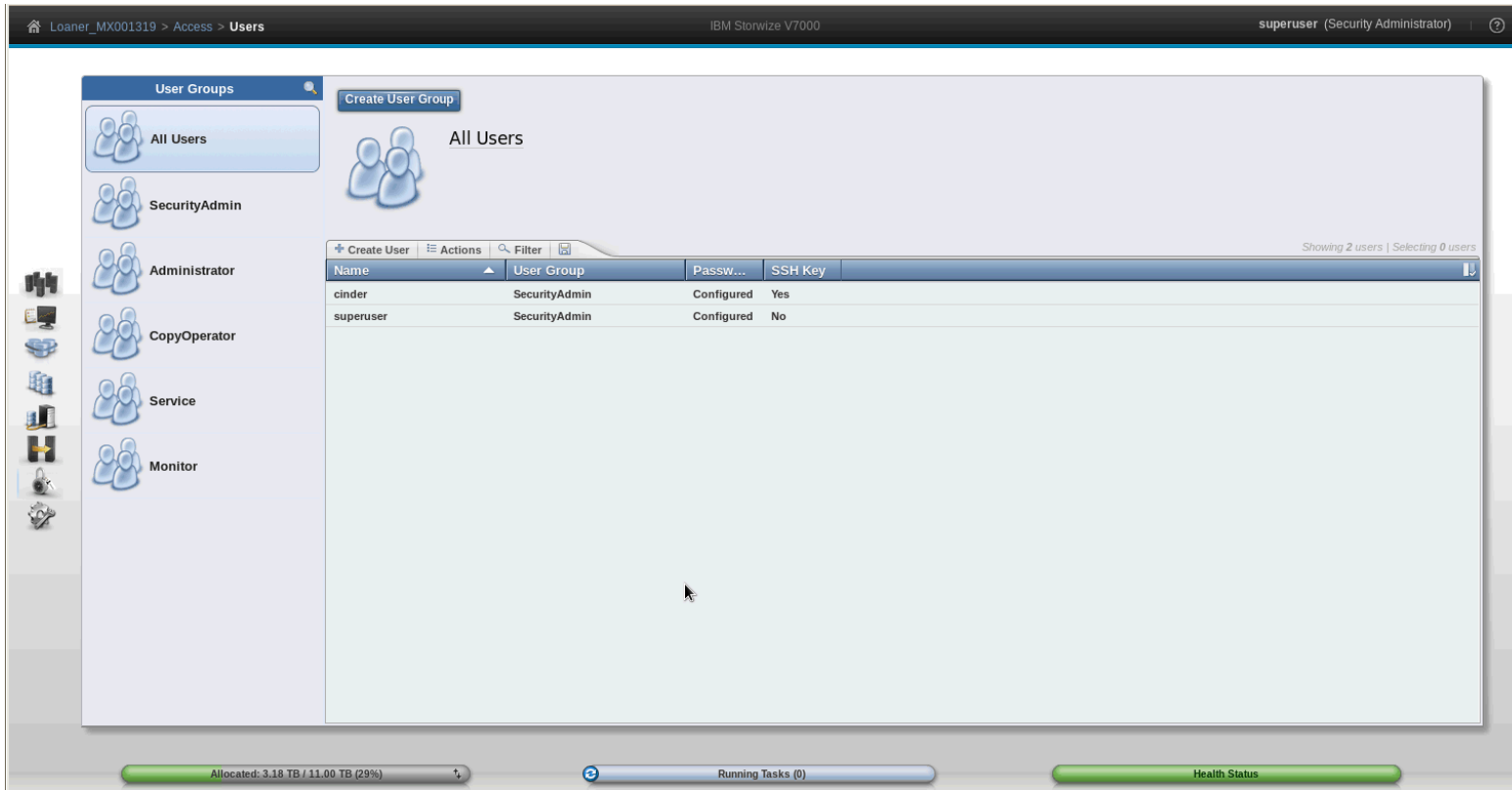
```

/*****/
/* CMO User Configurable Settings */
/*****/
cmo_admin_password          = "zlinux"
cmo_data_disk               = "EC501C EC5011"
openstack_system_role      = "controller"
openstack_controller_address = "192.168.1.71"
openstack_zvm_diskpool     = "FBA:LINUXP"
openstack_instance_name_template = "ecs%05x"
openstack_zvm_fcp_list     = "EA01-EA1E"
openstack_zvm_timeout     = "999"
openstack_zvm_scshipool   = "NONE"
openstack_zvm_zhcp_fcp_list = "EA1F"
openstack_san_ip          = "192.168.1.31"
openstack_san_private_key = "id_rsa"
openstack_storwize_svc_volpool_name = "cinderflash"
openstack_storwize_svc_vol_iogrp = "0"
openstack_zvm_image_default_password = "zlinux"
openstack_xcat_mgt_ip     = "NONE"
openstack_xcat_mgt_mask  = "NONE"
openstack_zvm_xcat_master = "ecsvm1"
openstack_zvm_vmrelocate_force = "NONE"

```

Cinder

- ❑ Requires a userid setup in the V7000 for Cinder
- ❑ Here we defined one called “cinder”



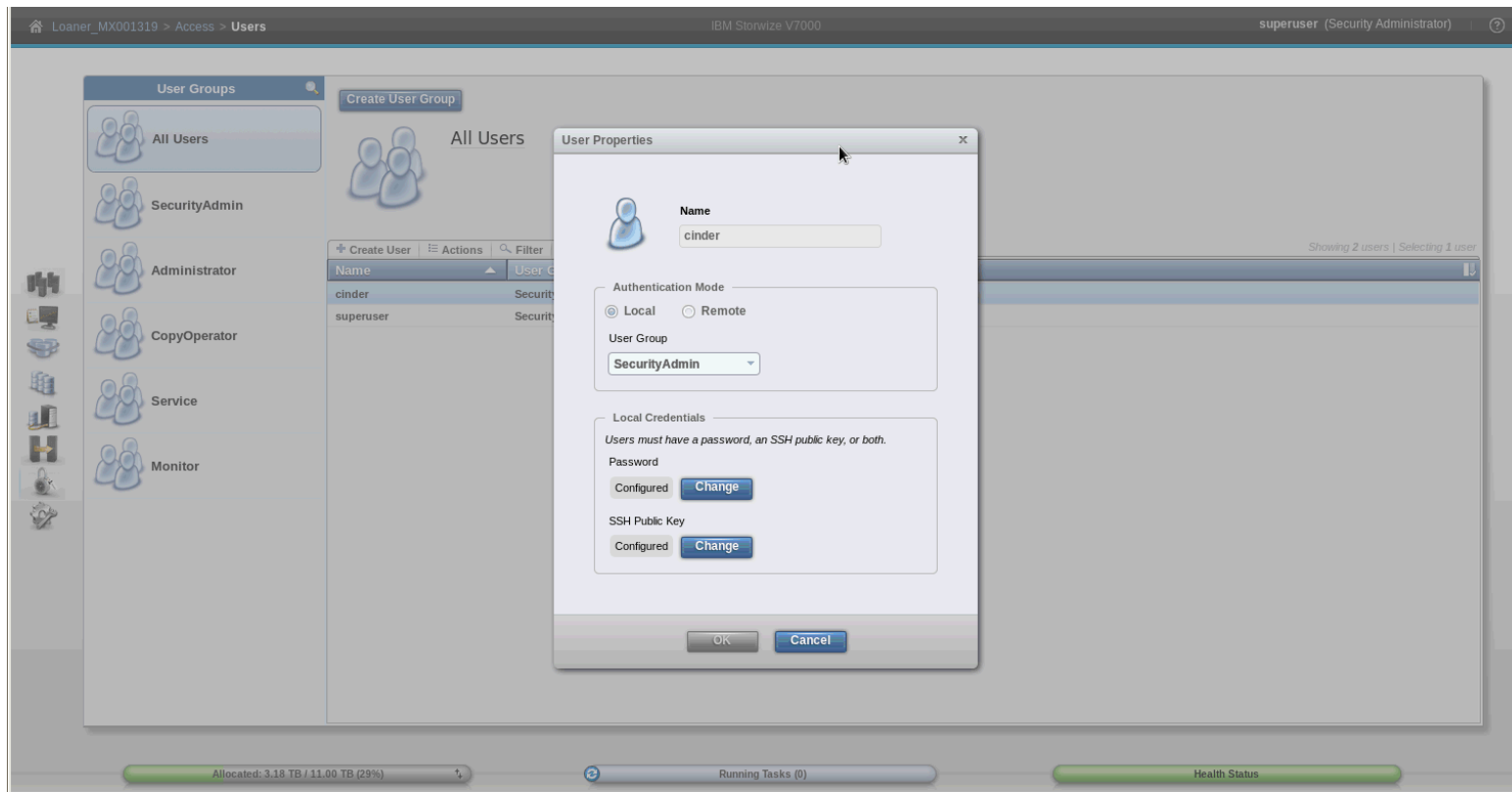
The screenshot shows the IBM Storwize V7000 user management interface. The breadcrumb navigation is "Loaner_MX001319 > Access > Users". The user is logged in as "superuser (Security Administrator)". The "User Groups" section is active, showing a list of groups: All Users, SecurityAdmin, Administrator, CopyOperator, Service, and Monitor. The "All Users" group is selected, and a table displays the users within this group.

Name	User Group	Passw....	SSH Key
cinder	SecurityAdmin	Configured	Yes
superuser	SecurityAdmin	Configured	No

At the bottom of the interface, there are three status bars: "Allocated: 3.18 TB / 11.00 TB (29%)", "Running Tasks (0)", and "Health Status".

Cinder

- ❑ A public private key pair is used for authentication by ICM/Cinder and V7000
- ❑ The public key needs to be upload to the V7000 user for Cinder
- ❑ The private key is configured in z/VM and the ICM server



Cinder

- A new volume can easily be created via a single command

```
[mnadmin@xcat1 cinder] $ nova volume-create 1
```

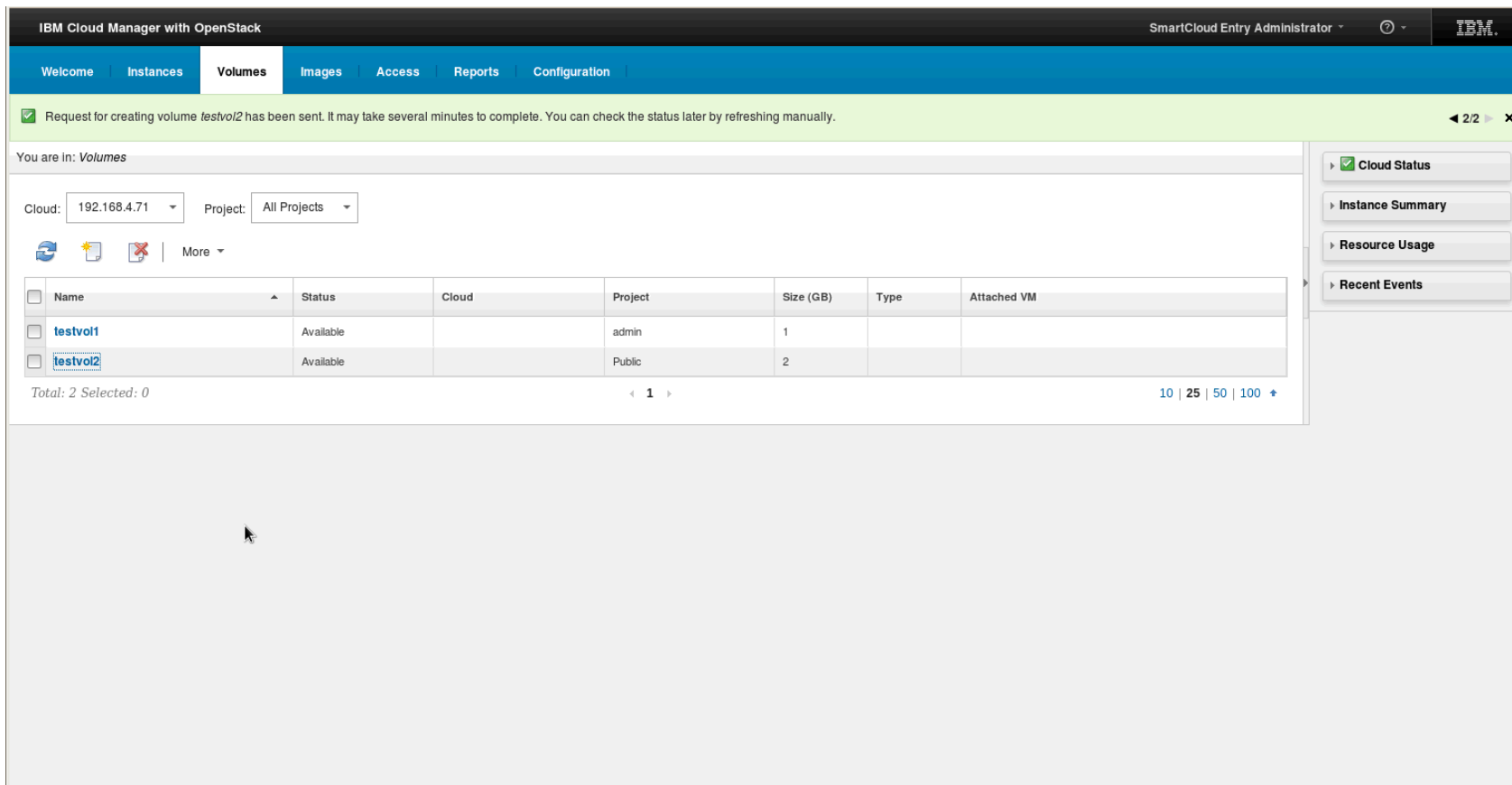
Property	Value
attachments	[]
availability_zone	nova
bootable	false
created_at	2015-04-29T19:01:05.939180
display_description	-
display_name	-
encrypted	False
id	e4cef13a-70d4-4800-be21-0c18473d4b1d
metadata	{}
size	1
snapshot_id	-
source_volid	-
status	creating
volume_type	None

```
[mnadmin@xcat1 cinder] $ nova volume-list
```

ID	Status	Display Name	Size	Volume Type	Attached to
e4cef13a-70d4-4800-be21-0c18473d4b1d	available	-	1	None	

Cinder

- Volumes can be queried or managed from the ICM UI



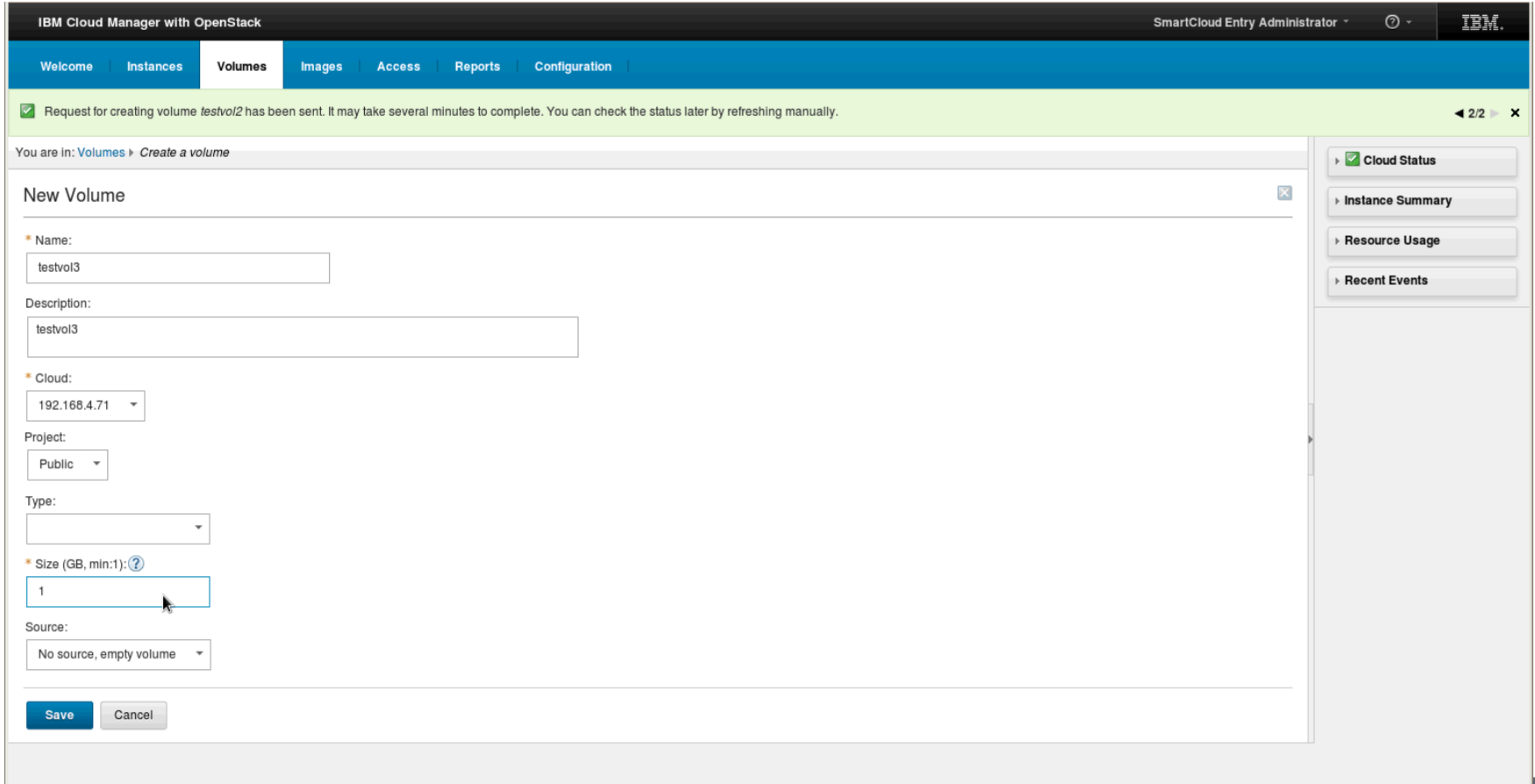
The screenshot shows the IBM Cloud Manager interface for OpenStack Volumes. At the top, there's a navigation bar with tabs for Welcome, Instances, Volumes (selected), Images, Access, Reports, and Configuration. A notification banner at the top states: "Request for creating volume testvol2 has been sent. It may take several minutes to complete. You can check the status later by refreshing manually." Below this, the page title is "You are in: Volumes". There are filters for "Cloud: 192.168.4.71" and "Project: All Projects". A table lists the volumes:

Name	Status	Cloud	Project	Size (GB)	Type	Attached VM
testvol1	Available		admin	1		
testvol2	Available		Public	2		

At the bottom of the table, it says "Total: 2 Selected: 0". On the right side, there's a sidebar with buttons for "Cloud Status", "Instance Summary", "Resource Usage", and "Recent Events".

Cinder

- Adding a new volume is relatively simple
 - Name, cloud, type, and size



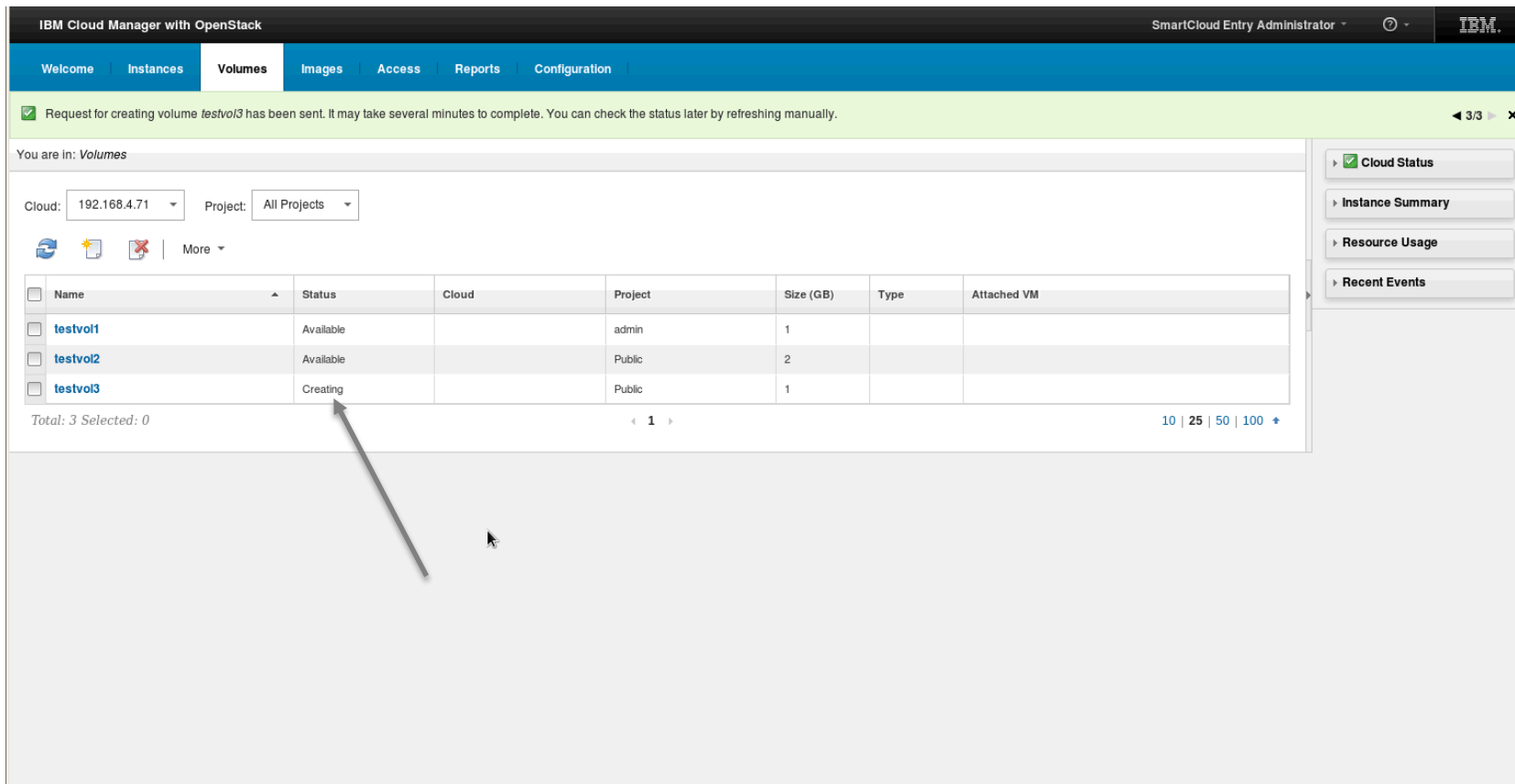
The screenshot shows the IBM Cloud Manager with OpenStack interface. The top navigation bar includes 'Welcome', 'Instances', 'Volumes', 'Images', 'Access', 'Reports', and 'Configuration'. The 'Volumes' tab is active. A green notification bar at the top states: 'Request for creating volume testvol2 has been sent. It may take several minutes to complete. You can check the status later by refreshing manually.' Below this, the breadcrumb 'You are in: Volumes > Create a volume' is visible. The main content area is titled 'New Volume' and contains the following fields:

- Name:** testvol3
- Description:** testvol3
- Cloud:** 192.168.4.71
- Project:** Public
- Type:** (empty dropdown)
- Size (GB, min:1):** 1
- Source:** No source, empty volume

At the bottom of the form are 'Save' and 'Cancel' buttons. On the right side, there is a sidebar with several expandable sections: 'Cloud Status' (checked), 'Instance Summary', 'Resource Usage', and 'Recent Events'.

Cinder

- Provisioning of the new volume is complete in just a couple of seconds



IBM Cloud Manager with OpenStack | SmartCloud Entry Administrator | IBM

Welcome | Instances | **Volumes** | Images | Access | Reports | Configuration

✓ Request for creating volume *testvol3* has been sent. It may take several minutes to complete. You can check the status later by refreshing manually. 3/3 ✕

You are in: *Volumes*

Cloud: 192.168.4.71 | Project: All Projects

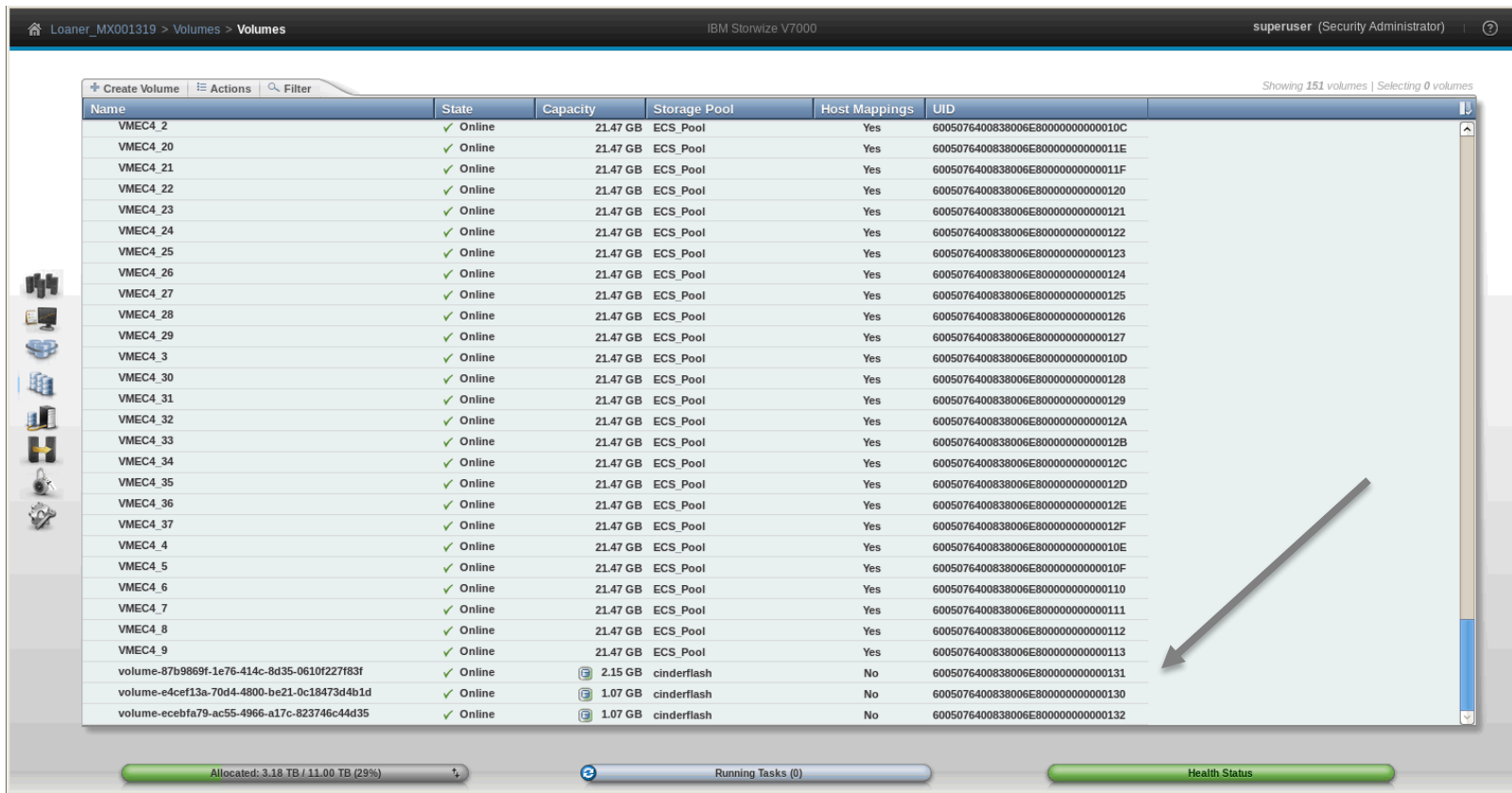
Name	Status	Cloud	Project	Size (GB)	Type	Attached VM
<input type="checkbox"/> testvol1	Available		admin	1		
<input type="checkbox"/> testvol2	Available		Public	2		
<input type="checkbox"/> testvol3	Creating		Public	1		

Total: 3 Selected: 0 | 10 | 25 | 50 | 100 +

Cloud Status | Instance Summary | Resource Usage | Recent Events

Cinder

- ❑ New volumes are visible in the V7000
- ❑ The names consist of a numeric string



Name	State	Capacity	Storage Pool	Host Mappings	UID
VMEC4_2	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000010C
VMEC4_20	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000011E
VMEC4_21	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000011F
VMEC4_22	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000120
VMEC4_23	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000121
VMEC4_24	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000122
VMEC4_25	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000123
VMEC4_26	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000124
VMEC4_27	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000125
VMEC4_28	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000126
VMEC4_29	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000127
VMEC4_3	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000010D
VMEC4_30	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000128
VMEC4_31	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000129
VMEC4_32	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000012A
VMEC4_33	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000012B
VMEC4_34	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000012C
VMEC4_35	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000012D
VMEC4_36	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000012E
VMEC4_37	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000012F
VMEC4_4	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000010E
VMEC4_5	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E8000000000010F
VMEC4_6	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000110
VMEC4_7	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000111
VMEC4_8	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000112
VMEC4_9	Online	21.47 GB	ECS_Pool	Yes	6005076400838006E80000000000113
volume-87b9869f-1e76-414c-8d35-0610f227f83f	Online	2.15 GB	cinderflash	No	6005076400838006E80000000000131
volume-e4cef13a-70d4-4800-be21-0c18473d4b1d	Online	1.07 GB	cinderflash	No	6005076400838006E80000000000130
volume-ecbfa79-ac55-4966-a17c-823746c44d35	Online	1.07 GB	cinderflash	No	6005076400838006E80000000000132

Cinder

- Whether volumes are added from the UI or command line the information is available

```
mnadmin@xcat1 cinder] $ cinder list
+-----+-----+-----+-----+-----+-----+-----+
| ID | Status | Display Name | Size | Volume Type | Bootable | Attached to |
+-----+-----+-----+-----+-----+-----+-----+
| e4cef13a-70d4-4800-be21-0c18473d4b1d | available | testvoll | 1 | None | false | |
+-----+-----+-----+-----+-----+-----+-----+
[mnadmin@xcat1 cinder] $ cinder list --all-tenants
+-----+-----+-----+-----+-----+-----+-----+
| ID | Tenant ID | Status | Display Name | Size | Volume Type | Bootable | Attached to |
+-----+-----+-----+-----+-----+-----+-----+
| 87b9869f-1e76-414c-8d35-0610f227f83f | 31817e552167474ea5979699fe72af69 | available | testvol2 | 2 | None | false | |
| e4cef13a-70d4-4800-be21-0c18473d4b1d | 188b8c82bc044bbd8661d0bc42946e76 | available | testvoll | 1 | None | false | |
| ecebfa79-ac55-4966-a17c-823746c44d35 | 31817e552167474ea5979699fe72af69 | available | testvol3 | 1 | None | false | |
+-----+-----+-----+-----+-----+-----+-----+

[mnadmin@xcat1 cinder] $ cinder show ecebfa79-ac55-4966-a17c-823746c44d35
+-----+-----+
| Property | Value |
+-----+-----+
| attachments | [] |
| availability_zone | nova |
| bootable | false |
| created_at | 2015-04-29T19:13:19.000000 |
| display_description | testvol3 |
| display_name | testvol3 |
| encrypted | False |
| id | ecebfa79-ac55-4966-a17c-823746c44d35 |
| metadata | {} |
| os-vol-host-attr:host | xcat1.zcloud.net#Loaner_MX001319_cinderflash |
| os-vol-mig-status-attr:migstat | None |
| os-vol-mig-status-attr:name_id | None |
| os-vol-tenant-attr:tenant_id | 31817e552167474ea5979699fe72af69 |
| os-volume-replication:driver_data | None |
| os-volume-replication:extended_status | None |
| size | 1 |
| snapshot_id | None |
| source_volid | None |
| status | available |
| volume_type | None |
+-----+-----+
```

ICM Agenda

- ❑ IBM Cloud Manager and OpenStack
- ❑ Architecture on z Systems
- ❑ Installation and Customization
 - ❑ DMSSICNF and DMSSICMO
 - ❑ Appliance
- ❑ Virtual Server Requirements
- ❑ Virtual Server Image Capture
- ❑ Virtual Server Deployment
- ❑ SMTP Notifications
- ❑ LDAP Authentication
- ❑ Cinder

- **Chef Server, Client, Recipes**
- ❑ Resources and References

Chef

- ❑ ICM 4.2 Appliance on z, ships with a Chef server included
- ❑ Chef is an automation framework
- ❑ Chef can be used to deploy OS configs or middleware products.
- ❑ Chef uses cookbooks and recipes to accomplish this
- ❑ You should logon change the default password
- ❑ The default “admin” password is p@ssw0rd1
- ❑ Chef server @ `https://<<appliance ip>>:14443/user/admin/edit`

- ❑ A Chef client RPM must be installed on all client you intend to use Chef on

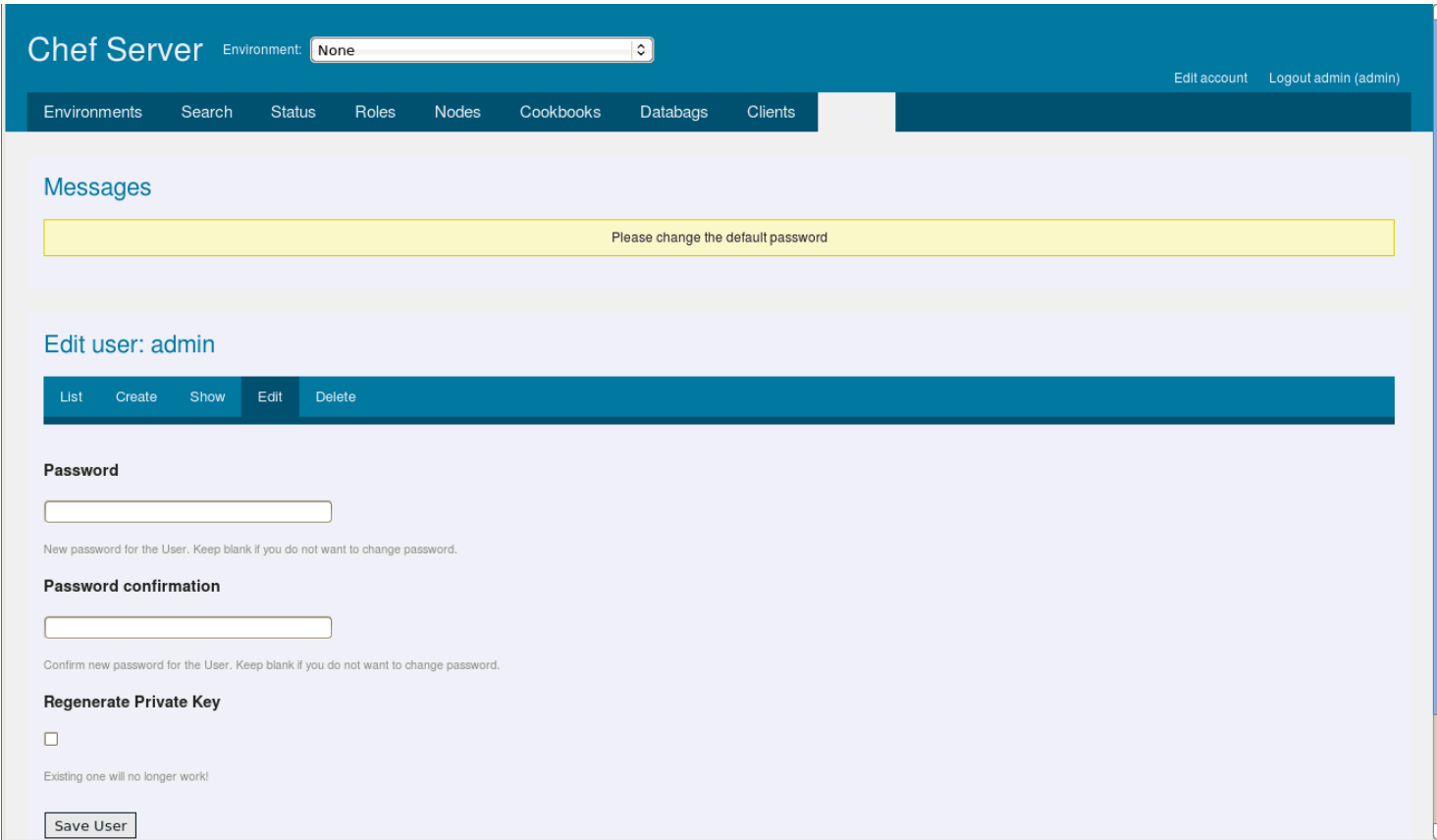
- ❑ Check the status of your Chef server:

```
[mnadmin@xcat1 ~] $ sudo chef-server-ctl status
run: bookshelf: (pid 3459) 65803s; run: log: (pid 3458) 65803s
run: chef-expander: (pid 3457) 65803s; run: log: (pid 3453) 65803s
run: chef-server-webui: (pid 3454) 65803s; run: log: (pid 3452) 65803s
run: chef-solr: (pid 3451) 65803s; run: log: (pid 3450) 65803s
run: erchef: (pid 3449) 65803s; run: log: (pid 3448) 65803s
run: nginx: (pid 3456) 65803s; run: log: (pid 3447) 65803s
run: postgresql: (pid 3465) 65803s; run: log: (pid 3455) 65803s
run: rabbitmq: (pid 3472) 65803s; run: log: (pid 3471) 65803s
```

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Chef Server

- Minimally change that default password for the admin userid !!



Chef Server Environment: **None**

Edit account Logout admin (admin)

Environments Search Status Roles Nodes Cookbooks Databags Clients

Messages

Please change the default password

Edit user: admin

List Create Show Edit Delete

Password

New password for the User. Keep blank if you do not want to change password.

Password confirmation

Confirm new password for the User. Keep blank if you do not want to change password.

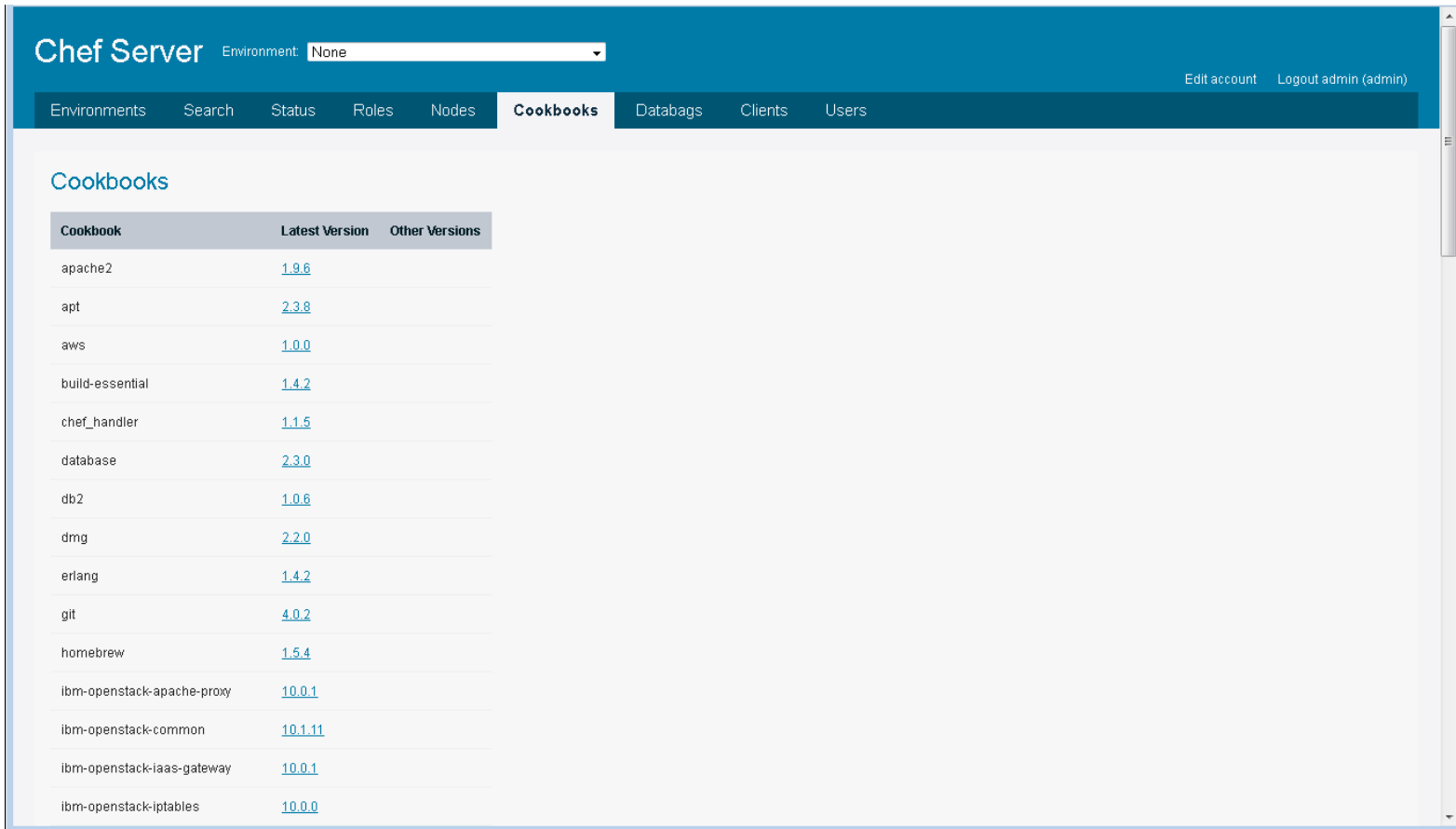
Regenerate Private Key

Existing one will no longer work!

Save User

Chef Server

- A number of cookbooks and recipes are already installed
 - apache2, aws, db2, git, iptables, logrotate, mysql, ntp, yum, and more



The screenshot shows the Chef Server web interface. The top navigation bar includes 'Environments', 'Search', 'Status', 'Roles', 'Nodes', 'Cookbooks', 'Databags', 'Clients', and 'Users'. The 'Cookbooks' tab is selected. Below the navigation bar, there is a table listing various cookbooks and their latest versions.

Cookbook	Latest Version	Other Versions
apache2	1.9.6	
apt	2.3.8	
aws	1.0.0	
build-essential	1.4.2	
chef_handler	1.1.5	
database	2.3.0	
db2	1.0.6	
dmz	2.2.0	
erlang	1.4.2	
git	4.0.2	
homebrew	1.5.4	
ibm-openstack-apache-proxy	10.0.1	
ibm-openstack-common	10.1.11	
ibm-openstack-iaas-gateway	10.0.1	
ibm-openstack-iptables	10.0.0	

Chef - Recipes

- ❑ Chef recipes can be found in a variety of places
- ❑ For some IBM products such as WebSphere check the Passport Advantage site
- ❑ Also available on github
 - ❑ <https://github.com/wasdev>
- ❑ Thousands of cookbooks at <https://supermarket.chef.io/cookbooks-directory>
- ❑ You can also build your own!

Chef /var/log/chef-server

- ❑ Customize the log rotation to avoid of space condition
- ❑ May see “erchef” subdirectory fill
- ❑ Logs are event driven, not by size or days
- ❑ /etc/chef-servern/chef-server.rb
- ❑ `opscode_erchef[“log_directory”]`
- ❑ `opscode_erchef[“log_rotation”]`
- ❑ `chef-server-ctl reconfigure` to activate changes

Chef clients

- ❑ Can add a Chef client with knife bootstrap
- ❑ Need to be able to perform name resolution for Chef server/client

Chef clients – client installation

```

bash-4.1# sudo knife bootstrap 172.110.100.51 -x myuserid -P mypassword -V
Connecting to 172.110.100.51
172.110.100.51 INFO: Adding certificate for Chef server: xcat1:14443
172.110.100.51 depth=0 C = US, ST = WA, L = Seattle, O = YouCorp, OU = Operations, CN = xcat1, emailAddress = you@example.com
172.110.100.51 verify error:num=18:self signed certificate
172.110.100.51 verify return:1
172.110.100.51 depth=0 C = US, ST = WA, L = Seattle, O = YouCorp, OU = Operations, CN = xcat1, emailAddress = you@example.com
172.110.100.51 verify return:1
172.110.100.51 DONE
172.110.100.51 INFO: Installing chef client version 11.12.8 for platform el6 and architecture s390x
172.110.100.51 INFO: Chef client install source URL: https://xcat1:14443/yum-repo/chef/s390x/chef-11.12.8-1.el6.s390x.rpm
172.110.100.51 --2015-05-08 17:36:18-- https://xcat1:14443/yum-repo/chef/s390x/chef-11.12.8-1.el6.s390x.rpm
172.110.100.51 Resolving xcat1... 172.110.100.201
172.110.100.51 Connecting to xcat1[172.110.100.201]:14443... connected.
172.110.100.51 WARNING: cannot verify xcat1's certificate, issued by
"/C=US/ST=WA/L=Seattle/O=YouCorp/OU=Operations/CN=xcat1/emailAddress=you@example.com":
172.110.100.51 Self-signed certificate encountered.
172.110.100.51 HTTP request sent, awaiting response... 200 OK
172.110.100.51 Length: 45178367 (43M) [application/x-redhat-package-manager]
172.110.100.51 Saving to: "/tmp/tmp.TDHsb2jruH"
172.110.100.51 100%[=====>] 45,178,367 44.4M/s in 1.0s
172.110.100.51 172.110.100.51 2015-05-08 17:36:19 (44.4 MB/s) - "/tmp/tmp.TDHsb2jruH" saved [45178367/45178367]
172.110.100.51 172.110.100.51 Preparing... ##### [100%]
172.110.100.51 1:chef ##### [100%]
172.110.100.51 patching file /opt/chef/embedded/lib/ruby/gems/2.1.0/gems/ohai-7.0.4/lib/ohai/plugins/linux/platform.rb
172.110.100.51 patching file /opt/chef/embedded/lib/ruby/gems/2.1.0/gems/ohai-7.0.4/lib/ohai/plugins/linux/cpu.rb
172.110.100.51 patching file /opt/chef/embedded/lib/ruby/gems/2.1.0/gems/ohai-8.0.0/lib/ohai/plugins/linux/platform.rb
172.110.100.51 patching file /opt/chef/embedded/lib/ruby/gems/2.1.0/gems/ohai-8.0.0/lib/ohai/plugins/linux/cpu.rb
172.110.100.51 Thank you for installing Chef!
172.110.100.51 INFO: Adding trusted certificate for Chef server: xcat1
172.110.100.51 Starting Chef Client, version 11.12.8
172.110.100.51 Creating a new client identity for rgylrx64.pdl.pok.ibm.com using the validator key.
172.110.100.51 resolving cookbooks for run list: []
172.110.100.51 Synchronizing Cookbooks:
172.110.100.51 Compiling Cookbooks...
172.110.100.51 [2015-05-08T17:36:33-04:00] WARN: Node rgylrx64.pdl.pok.ibm.com has an empty run list.
172.110.100.51 Converging 0 resources
172.110.100.51 Running handlers...
172.110.100.51 Running handlers complete

172.110.100.51 Chef Client finished, 0/0 resources updated in 2.842187415 seconds

```

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Chef clients with recipe – installing git via recipe

```
bash-4.1# knife bootstrap rgylxsp3 -x myuserid -P mypasswd -V -r recipe[git]
Connecting to rgylxsp3
rgylxsp3 INFO: Adding trusted certificate for Chef server: xcat1
rgylxsp3 Starting Chef Client, version 11.12.8
rgylxsp3 resolving cookbooks for run list: ["git"]
rgylxsp3 Synchronizing Cookbooks:
rgylxsp3  - git
rgylxsp3  - dmg
rgylxsp3  - build-essential
rgylxsp3  - windows
rgylxsp3  - chef_handler
rgylxsp3  - runit
rgylxsp3  - yum
rgylxsp3  - yum-epel
rgylxsp3 Compiling Cookbooks...
rgylxsp3 Converging 1 resources
rgylxsp3 Recipe: git::default
rgylxsp3  * package[git] action install (up to date)
rgylxsp3
rgylxsp3 Running handlers:
rgylxsp3 Running handlers complete
rgylxsp3
rgylxsp3 Chef Client finished, 0/1 resources updated in 12.760859464 seconds
bash-4.1#
```


Chef clients with recipe - git installed

```
rgylxsp3:~ # git
usage: git [--version] [--exec-path[=<path>]] [--html-path] [--man-path] [--info-path]
        [-p|--paginate|--no-pager] [--no-replace-objects] [--bare]
        [--git-dir=<path>] [--work-tree=<path>] [--namespace=<name>]
        [-c name=value] [--help]
        <command> [<args>]
```

The most commonly used git commands are:

add	Add file contents to the index
bisect	Find by binary search the change that introduced a bug
branch	List, create, or delete branches
checkout	Checkout a branch or paths to the working tree
clone	Clone a repository into a new directory
commit	Record changes to the repository
diff	Show changes between commits, commit and working tree, etc
fetch	Download objects and refs from another repository
grep	Print lines matching a pattern
init	Create an empty git repository or reinitialize an existing one
log	Show commit logs
merge	Join two or more development histories together
mv	Move or rename a file, a directory, or a symlink
pull	Fetch from and merge with another repository or a local branch
push	Update remote refs along with associated objects
rebase	Forward-port local commits to the updated upstream head
reset	Reset current HEAD to the specified state
rm	Remove files from the working tree and from the index
show	Show various types of objects
status	Show the working tree status
tag	Create, list, delete or verify a tag object signed with GPG

See 'git help <command>' for more information on a specific command.

```
rgylxsp3:~ #
```

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ICM Agenda

- ❑ IBM Cloud Manager and OpenStack
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- ❑ Virtual Server Image Capture
- ❑ Virtual Server Deployment
- ❑ SMTP Notifications
- ❑ LDAP Authentication
- ❑ Cinder

- ❑ Chef Server, Client, Recipes
- **Resources and References**

ICM Resources and References

- Enabling z/VM for OpenStack
 - <http://www.vm.ibm.com/sysman/openstk.html>

- z/VM Service for ICM
 - <http://www.vm.ibm.com/sysman/osmntlvl.html>

- z/VM Service for xCAT
 - <http://www.vm.ibm.com/sysman/xcmntlvl.html>

- z/VM 6.3 March 2015 SMAPI
 - <http://publibz.boulder.ibm.com/epubs/pdf/hcsl8c23.pdf>

- ICM 4.2 Knowledge Center
 - http://www.ibm.com/support/knowledgecenter/SST55W_4.2.0/liaca/liaca_kc_welcome.html

- OpenStack Command Line Reference
 - <http://docs.openstack.org/cli-reference/content>

Thank you for attending!



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