



OpenStack training

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What is OpenStack?



OpenStack is a collection of open source projects that provides an operating platform for orchestrating clouds in a massively scale.

What is OpenStack?

"Founded by Rackspace Hosting and NASA, OpenStack has grown to be a global software community of developers collaborating on a standard and massively scalable open source cloud operating system."

"All of the code for OpenStack is freely available under the Apache 2.0 license. Anyone can run it, build on it, or submit changes back to the project."

What is OpenStack?

At CERN we have the following OpenStack projects deployed:

- compute service (nova)
- image service (glance)
- dashboard service (horizon)
- block storage service (cinder)
- metering service (telemetry)
- identity service (keystone)

First steps with OpenStack at CERN

- Subscribe CERN Cloud Service

<https://resources.web.cern.ch/resources/Manage/ListServices.aspx>

- (optional) Install CLIs (nova, glance, cinder, ceilometer)

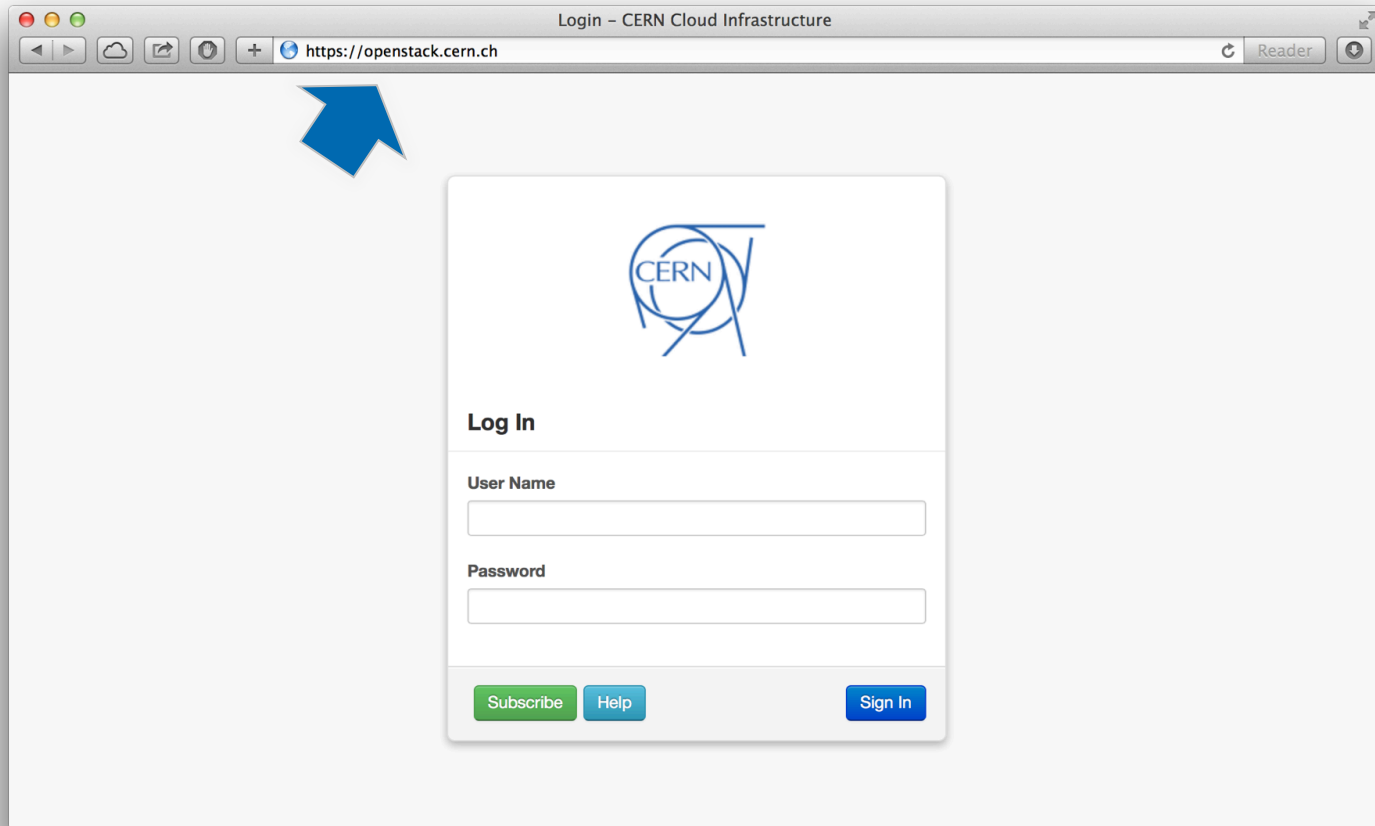
- Dependent on your OS.

- See: <https://information-technology.web.cern.ch/book/cern-cloud-infrastructure-user-guide/advanced-topics/installing-tools-client-machines>

- See: http://docs.openstack.org/user-guide/content/install_clients.html for more information.

- All CLIs are available on lxplus and aiadm

Login into OpenStack dashboard



How to create a keypair (dashboard)

Access & Security – CERN Cloud Infrastructure

https://openstack.cern.ch/dashboard/project/access_and_security/

Access & Security

Logged in as: belmiro [Settings](#) [Help](#) [Submit a ticket](#) [Sign Out](#)

Keypairs [API Access](#)

Keypairs [+ Create Keypair](#) [↑ Import Keypair](#) [Delete Keypairs](#)

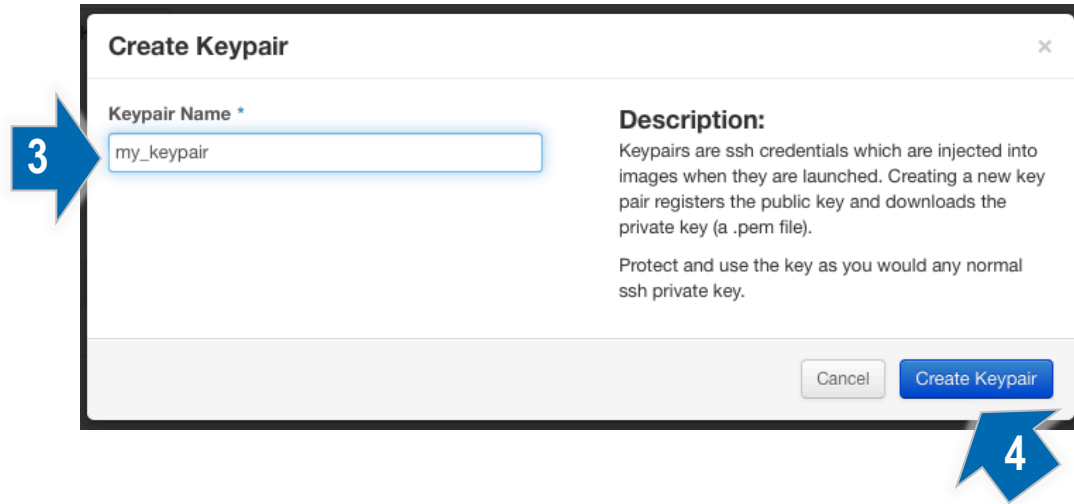
| <input type="checkbox"/> | Keypair Name | Fingerprint | Actions |
|--------------------------|--------------|---|--------------------------------|
| <input type="checkbox"/> | belmiro | ad:40:3c:15:86:6b:c8:16:af:27:80:dc:66:aa:0e:d3 | Delete Keypair |

Displaying 1 item

1

2

How to create a keypair (dashboard)



Create Keypair ×

Keypair Name *

Description:
Keypairs are ssh credentials which are injected into images when they are launched. Creating a new key pair registers the public key and downloads the private key (a .pem file).
Protect and use the key as you would any normal ssh private key.

How to create a keypair (dashboard)

The keypair "my_keypair" should download automatically. If not use the link below.

[Download keypair "my_keypair"](#)

5) Download the private key file

6) Change its permissions so that only you can read and write to the file

```
$ chmod 0600 my_keypair.pem
```

7) Make the keypair known to SSH

```
$ ssh-add my_keypair.pem
```

How to create a keypair (nova CLI)

1) Generate a keypair with the name “my_keypair”

```
$ nova keypair-add my_keypair > my_keypair.pem
```

2) Change its permissions so that only you can read and write to the file

```
$ chmod 0600 my_keypair.pem
```

3) Make the keypair known to SSH

```
$ ssh-add my_keypair.pem
```

How to import a keypair (dashboard)

Access & Security – CERN Cloud Infrastructure

https://openstack.cern.ch/dashboard/project/access_and_security/

Access & Security

Logged in as: belmiro [Settings](#) [Help](#) [Submit a ticket](#) [Sign Out](#)

Keypairs [API Access](#)

1

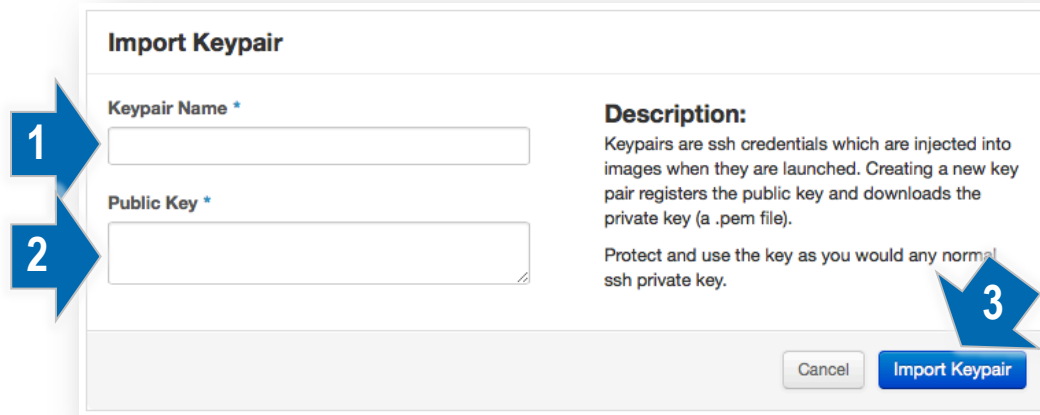
2

Keypairs [+ Create Keypair](#) [↑ Import Keypair](#) [Delete Keypairs](#)

| <input type="checkbox"/> | Keypair Name | Fingerprint | Actions |
|--------------------------|--------------|---|--------------------------------|
| <input type="checkbox"/> | belmiro | ad:40:3c:15:86:6b:c8:16:af:27:80:dc:66:aa:0e:d3 | Delete Keypair |

Displaying 1 item

How to import a keypair (dashboard)



Import Keypair

Keypair Name *

1

Public Key *

2

Description:

Keypairs are ssh credentials which are injected into images when they are launched. Creating a new key pair registers the public key and downloads the private key (a .pem file).

Protect and use the key as you would any normal ssh private key.

3

Cancel Import Keypair

How to create instance (dashboard)

The screenshot shows the OpenStack dashboard interface. The browser address bar displays `https://openstack.cern.ch/dashboard/project/instances/`. The page title is "Instances - CERN Cloud Infrastructure". The user is logged in as "adminiro".

The left sidebar contains a navigation menu with the following items:

- Project: Cloud Test (CURRENT PROJECT)
- Manage Compute
 - Overview
 - Instances (highlighted with arrow 1)
 - Volumes
 - Images & Snapshots
 - Access & Security

The main content area is titled "Instances" and features a search filter, a "+ Launch Instance" button (highlighted with arrow 2), and two red buttons: "Soft Reboot Instances" and "Terminate Instances".

| <input type="checkbox"/> | Instance Name | Image Name | IP Address | Size | Keypair | Status | Task | Power State | Uptime | Actions |
|--------------------------|---------------|-----------------------------------|----------------|---------------------------------------|---------|--------|------|-------------|----------------|------------------------|
| <input type="checkbox"/> | demo-005 | SLC6 Server - x86_64 [2014-01-30] | 188.184.149.30 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 1 day | Create Snapshot More ▾ |
| <input type="checkbox"/> | demo-004 | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.11 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 1 day | Create Snapshot More ▾ |
| <input type="checkbox"/> | demo-003 | SLC6 Server - x86_64 [2014-01-30] | 188.184.151.16 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 1 day | Create Snapshot More ▾ |

How to create instance (dashboard)

Launch Instance

Details * Access & Security * Post-Creation

Availability Zone
Any Availability Zone

Instance Name *

Flavor *
m1.tiny

Instance Count *
1

Instance Boot Source *

- ✓ --- Select source ---
- Boot from image
- Boot from snapshot
- Boot from volume
- Boot from image (creates a new volume).
- Boot from volume snapshot (creates a new volume).

Specify the details for launching an instance.
The chart below shows the resources used by this project in relation to the project's quotas.

Flavor Details

| | |
|----------------|---------|
| Name | m1.tiny |
| VCPUs | 1 |
| Root Disk | 0 GB |
| Ephemeral Disk | 0 GB |
| Total Disk | 0 GB |
| RAM | 512 MB |

Project Limits

| | |
|---------------------|--------------------------|
| Number of Instances | 5 of 50 Used |
| Number of VCPUs | 5 of 50 Used |
| Total RAM | 2,560 of 102,400 MB Used |

Cancel Launch

How to create instance (dashboard)

Launch Instance ✕

Details * Access & Security * Post-Creation

Keypair

Select a keypair +

- Select a keypair
- ✓ Select a keypair
- belmiro
- my_keypair

Control access to your instance via keypairs, security groups, and other mechanisms.

Confirm Admin Pass

Security Groups *

default

How to download credentials for nova/EC2 API

The screenshot shows the OpenStack dashboard interface for CERN Cloud Infrastructure. The browser address bar indicates the URL: `https://openstack.cern.ch/dashboard/project/access_and_security/`. The user is logged in as 'belmiro'. The dashboard is titled 'Access & Security' and has tabs for 'Keypairs' and 'API Access'. The 'API Access' tab is active, showing a table of API Endpoints. Three blue arrows with numbers 1, 2, and 3 point to the 'Access & Security' menu item, the 'API Access' tab, and the 'Download EC2 Credentials' button, respectively.

API Endpoints

| Service | Service Endpoint |
|----------|--|
| Compute | <code>http://openstack.cern.ch:8774/v2/4d679467-f828-41bc-90fa-ef8633594a6f</code> |
| Image | <code>http://openstack.cern.ch:9292</code> |
| Metering | <code>http://openstack.cern.ch:8777</code> |
| Volume | <code>http://openstack.cern.ch:8776/v1/4d679467-f828-41bc-90fa-ef8633594a6f</code> |
| EC2 | <code>http://openstack.cern.ch:8773/services/Cloud</code> |
| Identity | <code>https://openstack.cern.ch:5000/v2.0</code> |

Displaying 6 items

Buttons: Download OpenStack RC File, Download EC2 Credentials, Download PowerShell RC

How to download credentials for nova CLI

Example of the openrc file to set the required environment variables for the OpenStack command-line clients.

```
#!/bin/bash

export OS_AUTH_URL=https://openstack.cern.ch:5000/v2.0
export OS_TENANT_ID=<tenant-id>
export OS_TENANT_NAME=<tenant-name>
export OS_USERNAME=<username>

# With Keystone you pass the keystone password.
echo "Please enter your OpenStack Password: "
read -sr OS_PASSWORD_INPUT
export OS_PASSWORD=$OS_PASSWORD_INPUT
```

How to create instance (nova CLI)

Before you can launch an instance, gather the minimum following parameters:
“flavor”, “image” and “keypair”

1) List all available flavors

```
$ nova flavor-list
```

| ID | Name | Memory_MB | Disk | Ephemeral | Swap | VCPUs | RXTX_Factor | Is_Public |
|----|------------|-----------|------|-----------|------|-------|-------------|-----------|
| 1 | m1.tiny | 512 | 0 | 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 |
| 50 | win.small | 2048 | 60 | 0 | | 1 | 1.0 | True |
| 51 | win.medium | 4096 | 80 | 0 | | 2 | 1.0 | True |
| 52 | win.large | 8192 | 120 | 0 | | 4 | 1.0 | True |

How to create instance (nova CLI)

2) List all available images

```
$ nova image-list
```

| ID | Name | Status | Server |
|--------------------------------------|---|--------|--------|
| e3496dfa-11a7-496c-a634-107d3d10b22a | SLC5 CERN Server - i386 [2014-01-30] | ACTIVE | |
| 8ba9f996-4399-4dbb-93ee-98821d74f7a1 | SLC5 CERN Server - x86_64 [2014-01-30] | ACTIVE | |
| d1285114-9c39-467f-8d6b-487b10fbaf90 | SLC5 Server - i386 [2014-01-30] | ACTIVE | |
| 690be388-2e8e-4498-9c1f-7c4eac862260 | SLC5 Server - x86_64 [130624] | ACTIVE | |
| 41992b34-19e9-4ea9-ad30-177233795732 | SLC5 Server - x86_64 [130920] | ACTIVE | |
| 0d2c81c6-488d-42e6-8d30-8bcc5cdf5a58 | SLC5 Server - x86_64 [2014-01-30] | ACTIVE | |
| 764434ef-47a9-4345-befb-2b0479a346c5 | SLC6 CERN Server - i386 [130920] | ACTIVE | |
| 4d9a71b8-92e4-446e-9939-21f3a7e99211 | SLC6 CERN Server - i686 [2014-01-30] | ACTIVE | |
| 2171bb6e-6404-44e9-8cbd-8c6f6bacce1c | SLC6 CERN Server - x86_64 [130920] | ACTIVE | |
| 98686db8-834d-4cf5-bfe3-4bc09513682a | SLC6 CERN Server - x86_64 [2014-01-30] | ACTIVE | |
| 49e166bb-68e1-4969-b26a-64023e87ef28 | SLC6 Server - i386 [130624] | ACTIVE | |
| eac5a399-d1c5-43a4-928f-3bbbba7f7cf7 | SLC6 Server - i386 [130920] | ACTIVE | |
| ab2fd0fa-ae7b-4a29-a9fa-57c5c5baf6da | SLC6 Server - i686 [2014-01-30] | ACTIVE | |
| 321b8583-967f-4f56-913e-2a10e058ff37 | SLC6 Server - x86_64 [2014-01-30] | ACTIVE | |
| 4717a8fa-6980-4b33-b27d-1526db467749 | Windows 7 - x64 [130924] | ACTIVE | |
| b51918ba-8bf7-421e-a1a6-cee78928cbc9 | Windows 7 - x64 [131213] | ACTIVE | |
| 091a87b6-5882-42cf-9de3-d049281b51e8 | Windows Server 2008 R2 - x64 [130904] | ACTIVE | |
| 6be8397d-264f-4804-a7a9-e83488f6ee9a | Windows Server 2008 R2 - x64 [140116] | ACTIVE | |
| ea4179a9-cc5f-40ce-b700-92e1fee13a44 | Windows Server 2012 R2 - x64 [2014-01-29] | ACTIVE | |

How to create instance (nova CLI)

3) List all available keypairs

```
$ nova keypair-list
```

| Name | Fingerprint |
|------------|---|
| belmiro | ad:40:3c:15:86:6b:c8:16:af:27:80:dc:66:aa:0e:d3 |
| my_keypair | 6d:2f:b9:a2:a2:c7:46:fa:69:50:66:1a:6b:30:d9:a6 |

How to create instance (nova CLI)

4) Create a new instance

```
$ nova boot --image 321b8583-967f-4f56-913e-2a10e058ff37 --flavor m1.tiny --key-name my_keypair my-vm
```

| Property | Value |
|--------------------------------------|--|
| OS-DCF:diskConfig | MANUAL |
| OS-EXT-AZ:availability_zone | nova |
| OS-EXT-STS:power_state | 0 |
| OS-EXT-STS:task_state | scheduling |
| OS-EXT-STS:vm_state | building |
| OS-SRV-USG:launched_at | - |
| OS-SRV-USG:terminated_at | - |
| accessIPv4 | |
| accessIPv6 | |
| config_drive | |
| created | 2014-03-14T22:14:23Z |
| flavor | m1.tiny (1) |
| hostId | |
| id | 3e822ed1-e27c-4ef8-b84d-c02f00585d5c |
| image | SLC6 Server - x86_64 [2014-01-30] (321b8583-967f-4f56-913e-2a10e058ff37) |
| key_name | my_keypair |
| metadata | {} |
| name | my-vm |
| os-extended-volumes:volumes_attached | [] |
| progress | 0 |
| security_groups | default |
| status | BUILD |
| tenant_id | 4d679467-f828-41bc-90fa-ef8633594a6f |
| updated | 2014-03-14T22:14:23Z |
| user_id | belmiro |

How to list available instances (nova CLI)

For each server the command returns the server ID, name, status, task state, power state and network address, as shown in the following output

```
$ nova list
```

| ID | Name | Status | Task State | Power State | Networks |
|--------------------------------------|----------|--------|------------|-------------|------------------------------|
| 7a78ea0e-47bf-48fe-af62-157492285afa | demo-001 | ACTIVE | - | Running | CERN_NETWORK=188.184.149.211 |
| 063bb389-67b5-4125-85ce-0972473724dd | demo-002 | ACTIVE | - | Running | CERN_NETWORK=188.184.168.44 |
| 913f4c16-23a9-48a0-8070-07f9a8245283 | demo-003 | ACTIVE | - | Running | CERN_NETWORK=188.184.151.16 |
| 087d0047-d4b6-4fe8-8224-c13c599beed0 | demo-004 | ACTIVE | - | Running | CERN_NETWORK=188.184.148.11 |
| 5c721948-0df4-412b-bc21-28c1448424b5 | demo-005 | ACTIVE | - | Running | CERN_NETWORK=188.184.149.30 |
| 3e822ed1-e27c-4ef8-b84d-c02f00585d5c | my-vm | ACTIVE | - | Running | CERN_NETWORK=188.184.148.241 |

How to list available instances (nova CLI)

- Search servers by “status” use “--status”
- Search servers by “name” use “--name”
- Search servers by “flavor” use “--flavor”
- Search servers by “image” use “--image”
- Get only “uuid” and “name” use “--minimal”

Examples:

```
$ nova list --name demo-003
```

| ID | Name | Status | Task State | Power State | Networks |
|--------------------------------------|----------|--------|------------|-------------|-----------------------------|
| 913f4c16-23a9-48a0-8070-07f9a8245283 | demo-003 | ACTIVE | - | Running | CERN_NETWORK=188.184.151.16 |

```
$ nova list --minimal
```

| ID | Name |
|--------------------------------------|----------|
| 7a78ea0e-47bf-48fe-af62-157492285afa | demo-001 |
| 063bb389-67b5-4125-85ce-0972473724dd | demo-002 |
| 913f4c16-23a9-48a0-8070-07f9a8245283 | demo-003 |
| 087d0047-d4b6-4fe8-8224-c13c599beed0 | demo-004 |
| 5c721948-0df4-412b-bc21-28c1448424b5 | demo-005 |
| 3e822ed1-e27c-4ef8-b84d-c02f00585d5c | my-vm |

How to list available instances (nova CLI)

To select the fields to display use “--fields” and comma-separated list of fields to display.

Example:

```
$ nova list --fields name,user_id,created
```

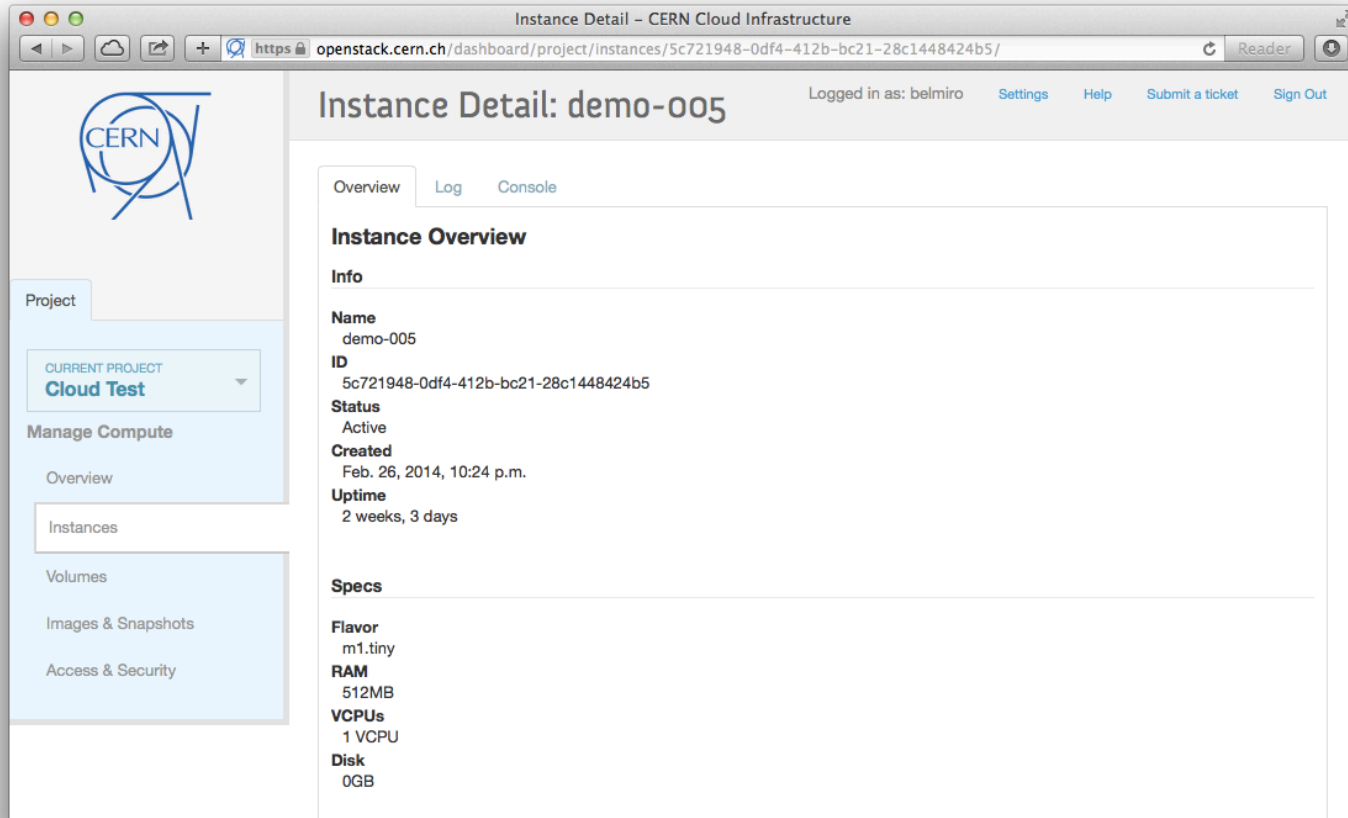
| ID | Name | User Id | Created |
|--------------------------------------|----------|---------|----------------------|
| 7a78ea0e-47bf-48fe-af62-157492285afa | demo-001 | belmiro | 2014-02-26T22:24:18Z |
| 063bb389-67b5-4125-85ce-0972473724dd | demo-002 | belmiro | 2014-02-26T22:24:30Z |
| 913f4c16-23a9-48a0-8070-07f9a8245283 | demo-003 | belmiro | 2014-02-26T22:24:38Z |
| 087d0047-d4b6-4fe8-8224-c13c599beed0 | demo-004 | belmiro | 2014-02-26T22:24:45Z |
| 5c721948-0df4-412b-bc21-28c1448424b5 | demo-005 | belmiro | 2014-02-26T22:24:55Z |
| 3e822ed1-e27c-4ef8-b84d-c02f00585d5c | my-vm | belmiro | 2014-03-14T22:14:23Z |

How to get instance details (dashboard)

The screenshot shows the OpenStack dashboard for CERN Cloud Infrastructure. The browser address bar is `https://openstack.cern.ch/dashboard/project/instances/`. The user is logged in as `belmiro`. The dashboard title is `Instances`. The left sidebar shows the `Project` dropdown set to `Cloud Test` and the `Manage Compute` menu with `Instances` selected. The main content area shows a table of instances with the following data:

| Instance Name | Image Name | IP Address | Size | Keypair | Status | Task | Power State | Uptime | Actions |
|---------------|-----------------------------------|----------------|---------------------------------------|---------|--------|------|-------------|----------------|----------------------|
| demo-005 | SLC6 Server - x86_64 [2014-01-30] | 188.184.149.30 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 1 day | Create Snapshot More |
| demo-004 | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.11 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 1 day | Create Snapshot More |
| demo-003 | SLC6 Server - x86_64 [2014-01-30] | 188.184.151.16 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 1 day | Create Snapshot More |

How to get instance details (dashboard)



The screenshot shows a web browser window titled "Instance Detail - CERN Cloud Infrastructure". The address bar shows the URL: <https://openstack.cern.ch/dashboard/project/instances/5c721948-0df4-412b-bc21-28c1448424b5/>. The page is titled "Instance Detail: demo-005" and shows the user is logged in as "belmiro".

The left sidebar contains the CERN logo and a navigation menu with the following items:

- Project
 - CURRENT PROJECT: **Cloud Test**
- Manage Compute
 - Overview
 - Instances
 - Volumes
 - Images & Snapshots
 - Access & Security

The main content area displays the "Instance Overview" for "demo-005". It includes tabs for "Overview", "Log", and "Console". The "Overview" tab is active, showing the following information:

Instance Overview

Info

- Name:** demo-005
- ID:** 5c721948-0df4-412b-bc21-28c1448424b5
- Status:** Active
- Created:** Feb. 26, 2014, 10:24 p.m.
- Uptime:** 2 weeks, 3 days

Specs

- Flavor:** m1.tiny
- RAM:** 512MB
- VCPUs:** 1 VCPU
- Disk:** 0GB

How to get instance details (nova CLI)

```
$ nova show 7a78ea0e-47bf-48fe-af62-157492285afa
```

| Property | Value |
|--------------------------------------|--|
| CERN_NETWORK network | 188.184.149.211 |
| OS-DCF:diskConfig | MANUAL |
| OS-EXT-AZ:availability_zone | nova |
| OS-EXT-STS:power_state | 1 |
| OS-EXT-STS:task_state | - |
| OS-EXT-STS:vm_state | active |
| OS-SRV-USG:launched_at | 2014-02-26T22:27:29.000000 |
| OS-SRV-USG:terminated_at | - |
| accessIPv4 | |
| accessIPv6 | |
| config_drive | |
| created | 2014-02-26T22:24:18Z |
| flavor | m1.tiny (1) |
| hostId | 859af9ab61d4627edbf8dee026e5124c4e6220545b5fabdd30e564dd |
| id | 7a78ea0e-47bf-48fe-af62-157492285afa |
| image | SLC6 Server - x86_64 [2014-01-30] (321b8583-967f-4f56-913e-2a10e058ff37) |
| key_name | - |
| metadata | {"cern-services": "false"} |
| name | demo-001 |
| os-extended-volumes:volumes_attached | [] |
| progress | 0 |
| security_groups | default |
| status | ACTIVE |
| tenant_id | 4d679467-f828-41bc-90fa-ef8633594a6f |
| updated | 2014-02-26T22:27:29Z |
| user_id | belmiro |

How to get console log (dashboard)

The screenshot shows the OpenStack dashboard interface. The browser address bar indicates the URL is `https://openstack.cern.ch/dashboard/project/instances/`. The page title is "Instances" and it shows the user is logged in as "belmiro".

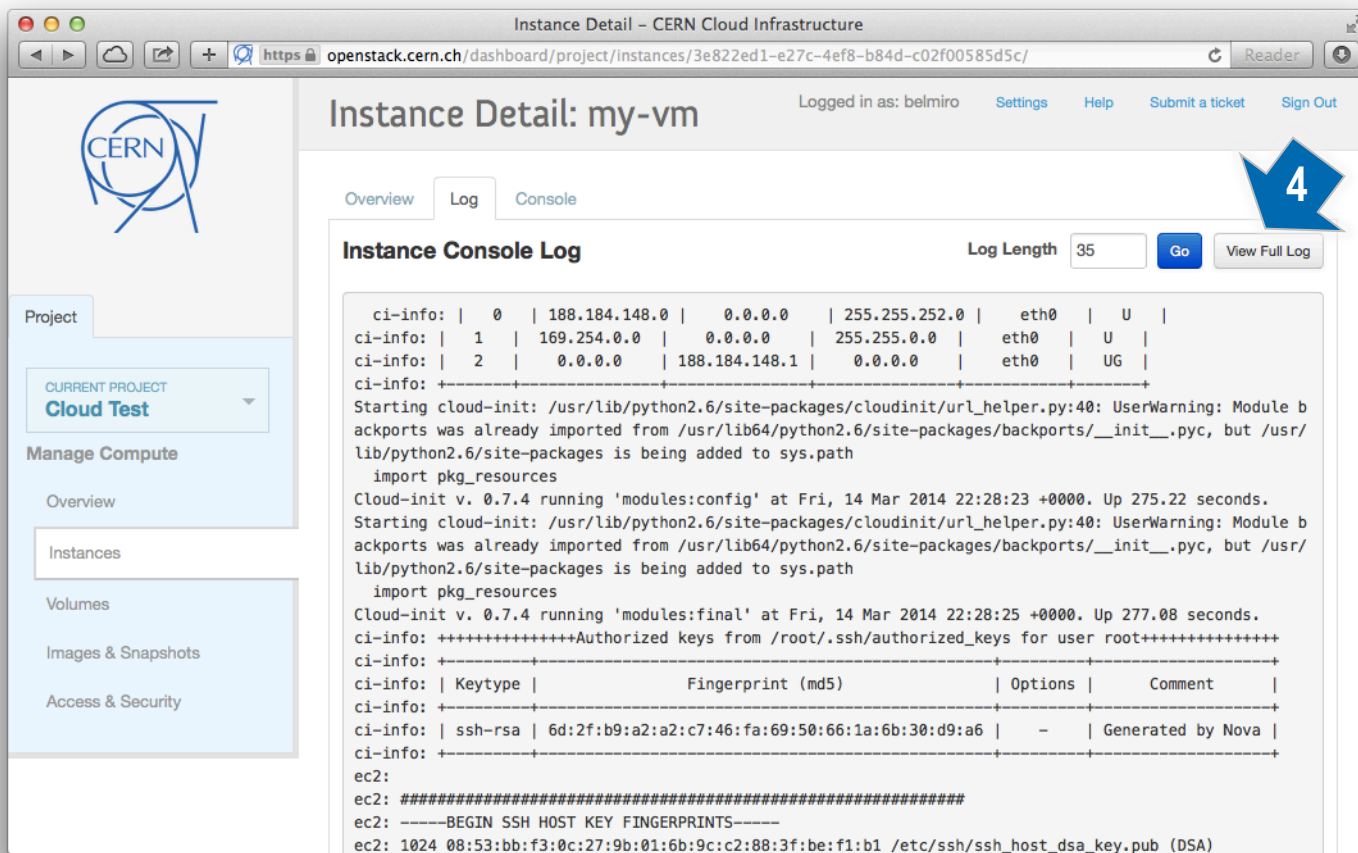
The "Instances" section includes a search filter, a "Launch Instance" button, and buttons for "Soft Reboot Instances" and "Terminate Instances".

| Instance Name | Image Name | IP Address | Size | Keypair | Status | Task | Power State | Uptime | Actions |
|---------------|-----------------------------------|-----------------|---------------------------------------|------------|--------|------|-------------|------------------|----------|
| my-vm | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.241 | m1.tiny 512MB RAM 1 VCPU 0 Disk | my_keypair | Active | None | Running | 2 days, 17 hours | More |
| demo-005 | SLC6 Server - x86_64 [2014-01-30] | 188.184.149.30 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 4 days | View Log |
| demo-004 | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.11 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 4 days | View Log |

The "More" dropdown menu for the "my-vm" instance contains the following options:

- Console
- View Log
- Pause Instance
- Suspend Instance
- Resize Instance
- Soft Reboot Instance
- Hard Reboot Instance
- Shut Off Instance
- Rebuild Instance
- Terminate Instance

How to get console log (dashboard)



The screenshot shows the OpenStack dashboard interface. The browser address bar displays the URL: `https://openstack.cern.ch/dashboard/project/instances/3e822ed1-e27c-4ef8-b84d-c02f00585d5c/`. The page title is "Instance Detail: my-vm". The user is logged in as "belmiro".

The "Log" tab is selected, and the "Instance Console Log" section is visible. A blue arrow with the number "4" points to the "Log" tab. The "Log Length" is set to 35, and the "View Full Log" button is visible.

```
ci-info: | 0 | 188.184.148.0 | 0.0.0.0 | 255.255.252.0 | eth0 | U |
ci-info: | 1 | 169.254.0.0 | 0.0.0.0 | 255.255.0.0 | eth0 | U |
ci-info: | 2 | 0.0.0.0 | 188.184.148.1 | 0.0.0.0 | eth0 | UG |
ci-info: +-----+-----+-----+-----+-----+-----+-----+
Starting cloud-init: /usr/lib/python2.6/site-packages/cloudinit/url_helper.py:40: UserWarning: Module b
ackports was already imported from /usr/lib64/python2.6/site-packages/backports/__init__.pyc, but /usr/
lib/python2.6/site-packages is being added to sys.path
import pkg_resources
Cloud-init v. 0.7.4 running 'modules:config' at Fri, 14 Mar 2014 22:28:23 +0000. Up 275.22 seconds.
Starting cloud-init: /usr/lib/python2.6/site-packages/cloudinit/url_helper.py:40: UserWarning: Module b
ackports was already imported from /usr/lib64/python2.6/site-packages/backports/__init__.pyc, but /usr/
lib/python2.6/site-packages is being added to sys.path
import pkg_resources
Cloud-init v. 0.7.4 running 'modules:final' at Fri, 14 Mar 2014 22:28:25 +0000. Up 277.08 seconds.
ci-info: +-----+-----+-----+-----+-----+-----+-----+
ci-info: +-----+-----+-----+-----+-----+-----+-----+
ci-info: | Keytype | Fingerprint (md5) | Options | Comment |
ci-info: +-----+-----+-----+-----+-----+-----+-----+
ci-info: | ssh-rsa | 6d:2f:b9:a2:c7:46:fa:69:50:66:1a:6b:30:d9:a6 | - | Generated by Nova |
ci-info: +-----+-----+-----+-----+-----+-----+-----+
ec2:
ec2: #####
ec2: -----BEGIN SSH HOST KEY FINGERPRINTS-----
ec2: 1024 08:53:bb:f3:0c:27:9b:01:6b:9c:c2:88:3f:be:f1:b1 /etc/ssh/ssh_host_dsa_key.pub (DSA)
```

How to get console log (nova CLI)

To get console log use "nova console-get <instance_uuid>"

```
$ nova console-log 3e822ed1-e27c-4ef8-b84d-c02f00585d5c

Initializing cgroup subsys cpuset
Initializing cgroup subsys cpu
Linux version 2.6.32-431.3.1.el6.x86_64 (mockbuild@lxdist01) (gcc version 4.4.7 20120313 (Red Hat 4.4.7-4) (GCC) )
Disabled fast string operations
BIOS-provided physical RAM map:
  BIOS-e820: 0000000000000000 - 000000000009dc00 (usable)
  BIOS-e820: 000000000009dc00 - 00000000000a0000 (reserved)
  BIOS-e820: 00000000000f0000 - 0000000000100000 (reserved)
  BIOS-e820: 0000000000100000 - 000000001ffffd00 (usable)
  BIOS-e820: 000000001ffffd00 - 0000000020000000 (reserved)
  BIOS-e820: 00000000ffffbc00 - 0000000100000000 (reserved)
DMI 2.4 present.
SMBIOS version 2.4 @ 0xFDA30
Hypervisor detected: KVM
last_pfn = 0x1ffff max_arch_pfn = 0x400000000
x86 PAT enabled: cpu 0, old 0x70106, new 0x7010600070106
init_memory_mapping: 0000000000000000-000000001ffffd00
RAMDISK: 1ef98000 - 1ffec876
ACPI: RSDP 0000000000fda00 00014 (v00 BOCHS )
ACPI: RSDT 000000001ffffd630 00034 (v01 BOCHS BXPCRSDT 00000001 BXPC 00000001)
ACPI: FACP 000000001ffffe10 00074 (v01 BOCHS BXPCFACP 00000001 BXPC 00000001)
ACPI: DSDT 000000001ffffd910 024A2 (v01 BXPC BXDSDT 00000001 INTL 20090123)
ACPI: FACS 000000001ffffdc0 00040

(...)
```

How to interact with console (dashboard)

The screenshot shows the OpenStack dashboard interface. The browser address bar indicates the URL is `https://openstack.cern.ch/dashboard/project/instances/`. The page title is "Instances" and the user is logged in as "belmiro".

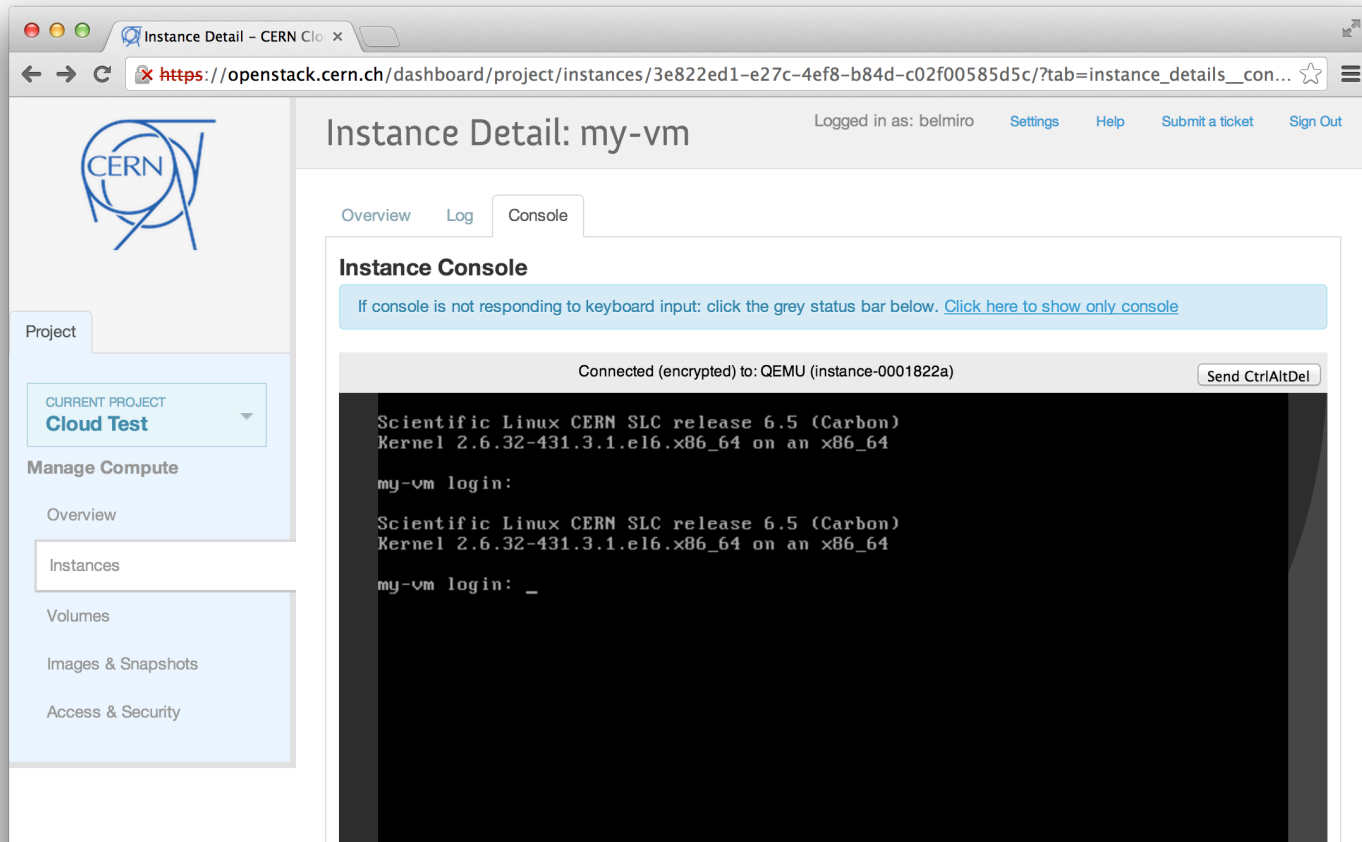
On the left sidebar, the "Project" section is expanded to show "Manage Compute". The "Instances" link is highlighted with a blue arrow and the number 1.

The main content area displays a table of instances. The table has columns for Instance Name, Image Name, IP Address, Size, Keypair, Status, Task, Power State, Uptime, and Actions. Three instances are listed: "my-vm", "demo-005", and "demo-004".

The "my-vm" instance is selected, and its "More" dropdown menu is open, showing options like "Console", "View Log", "Pause Instance", "Suspend Instance", "Resize Instance", "Soft Reboot Instance", "Hard Reboot Instance", "Shut Off Instance", "Rebuild Instance", and "Terminate Instance". A blue arrow with the number 2 points to the "More" dropdown, and a blue arrow with the number 3 points to the "Console" option.

| Instance Name | Image Name | IP Address | Size | Keypair | Status | Task | Power State | Uptime | Actions |
|---------------|-----------------------------------|-----------------|---------------------------------------|------------|--------|------|-------------|------------------|---------|
| my-vm | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.241 | m1.tiny 512MB RAM 1 VCPU 0 Disk | my_keypair | Active | None | Running | 2 days, 17 hours | More |
| demo-005 | SLC6 Server - x86_64 [2014-01-30] | 188.184.149.30 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 4 days | |
| demo-004 | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.11 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 4 days | |

How to interact with console (dashboard)



The screenshot shows a web browser window displaying the OpenStack dashboard. The page title is "Instance Detail: my-vm". The user is logged in as "belmiro". The dashboard has a sidebar on the left with the CERN logo and navigation options: "Project", "CURRENT PROJECT Cloud Test", "Manage Compute", "Overview", "Instances", "Volumes", "Images & Snapshots", and "Access & Security". The main content area has tabs for "Overview", "Log", and "Console". The "Console" tab is active, showing a terminal window titled "Connected (encrypted) to: QEMU (instance-0001822a)". The terminal output shows the login prompt for "my-vm" and the system boot information: "Scientific Linux CERN SLC release 6.5 (Carbon) Kernel 2.6.32-431.3.1.el6.x86_64 on an x86_64".

Instance Detail: my-vm

Logged in as: belmiro [Settings](#) [Help](#) [Submit a ticket](#) [Sign Out](#)

Overview Log Console

Instance Console

If console is not responding to keyboard input: click the grey status bar below. [Click here to show only console](#)

Connected (encrypted) to: QEMU (instance-0001822a) Send CtrlAltDel

```
Scientific Linux CERN SLC release 6.5 (Carbon)
Kernel 2.6.32-431.3.1.el6.x86_64 on an x86_64

my-vm login:

Scientific Linux CERN SLC release 6.5 (Carbon)
Kernel 2.6.32-431.3.1.el6.x86_64 on an x86_64

my-vm login: _
```

How to interact with console (nova CLI)

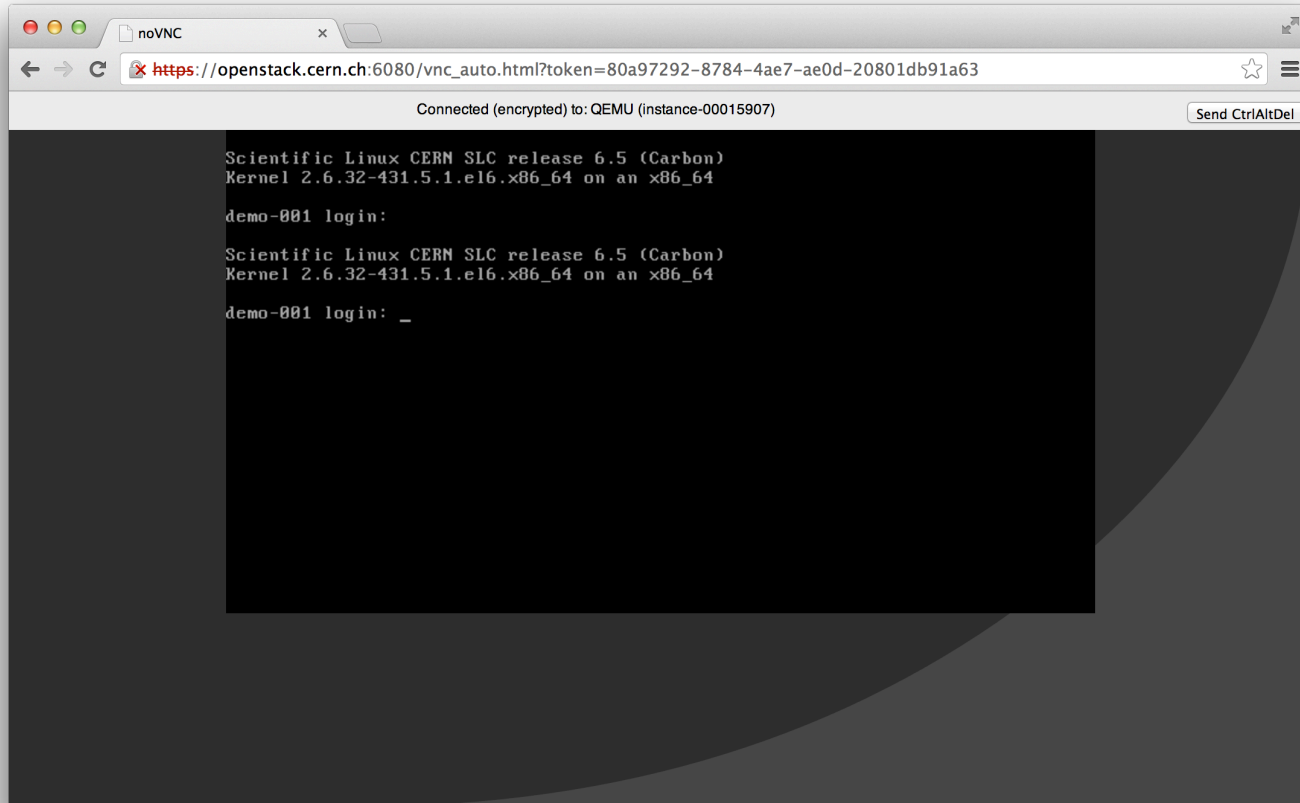
To get console log use "nova get-vnc-console <instance_uuid> novnc"

```
$ nova list
+-----+-----+-----+-----+-----+-----+
| ID                | Name    | Status | Task State | Power State | Networks                |
+-----+-----+-----+-----+-----+-----+
| 7a78ea0e-47bf-48fe-af62-157492285afa | demo-001 | ACTIVE | -          | Running    | CERN_NETWORK=188.184.149.211 |
| (...)             |         |         |           |            |                            |
+-----+-----+-----+-----+-----+-----+

$ nova get-vnc-console 7a78ea0e-47bf-48fe-af62-157492285afa novnc
+-----+-----+
| Type | Url                |
+-----+-----+
| novnc | https://openstack.cern.ch:6080/vnc_auto.html?token=80a97292-8784-4ae7-ae0d-20801db91a63 |
+-----+-----+
```

Copy the address and use your preferred browser to open the console

How to interact with console (nova CLI)



The image shows a noVNC browser window. The address bar contains the URL `https://openstack.cern.ch:6080/vnc_auto.html?token=80a97292-8784-4ae7-ae0d-20801db91a63`. Below the address bar, a status bar indicates "Connected (encrypted) to: QEMU (instance-00015907)" and a button labeled "Send CtrlAltDel". The main area of the window is a black terminal with white text. The text in the terminal is as follows:

```
Scientific Linux CERN SLC release 6.5 (Carbon)
Kernel 2.6.32-431.5.1.el6.x86_64 on an x86_64

demo-001 login:

Scientific Linux CERN SLC release 6.5 (Carbon)
Kernel 2.6.32-431.5.1.el6.x86_64 on an x86_64

demo-001 login: _
```

Create volume (dashboard)

The screenshot shows the OpenStack dashboard interface for managing volumes. The browser address bar indicates the URL is `https://openstack.cern.ch/dashboard/project/volumes/`. The user is logged in as 'belmiro'. The main content area is titled 'Volumes' and contains a table with columns: Name, Description, Size, Status, Type, Attached To, and Actions. The table is currently empty, displaying 'No items to display.' and 'Displaying 0 items'. A '+ Create Volume' button is visible in the top right of the main content area. The left sidebar shows the navigation menu with 'Volumes' selected.

1 →

Volumes – CERN Cloud Infrastructure

Logged in as: belmiro [Settings](#) [Help](#) [Submit a ticket](#) [Sign Out](#)

Volumes

| <input type="checkbox"/> | Name | Description | Size | Status | Type | Attached To | Actions |
|--------------------------|------|-------------|------|--------|------|-------------|---------|
| No items to display. | | | | | | | |
| Displaying 0 items | | | | | | | |

Create volume (dashboard)

Create Volume [Close]

3 **Volume Name ***
my_volume001

Description
Additional information here...

4 **Type**
standard

5 **Size (GB) ***
10

Volume Source
No source, empty volume.

Description:
Volumes are block devices that can be attached to instances.

Volume Limits

| | |
|-------------------------------|--------------------|
| Total Gigabytes (0 GB) | 1,000 GB Available |
| Number of Volumes (0) | 10 Available |

6 [Cancel] [Create Volume]

Create volume (cinder CLI)

To create a volume use:

"cinder create --display-name <volume_name> <volume_size>

```
$ cinder create --display-name my_volume002 10
```

| Property | Value |
|---------------------|--------------------------------------|
| attachments | [] |
| availability_zone | nova |
| bootable | false |
| created_at | 2014-03-19T21:11:22.262268 |
| display_description | None |
| display_name | my_volume002 |
| id | bc022ed7-cd80-41df-a819-fbaa3b9d4a3d |
| metadata | {} |
| size | 10 |
| snapshot_id | None |
| source_volid | None |
| status | creating |
| volume_type | standard |

List all available volumes:

```
$ cinder list
```

| ID | Status | Display Name | Size | Volume Type | Bootable | Attached to |
|--------------------------------------|-----------|--------------|------|-------------|----------|-------------|
| bc022ed7-cd80-41df-a819-fbaa3b9d4a3d | available | my_volume002 | 10 | standard | false | |
| c2ea689e-7f2c-4490-9165-5a2a97a1cbc9 | available | my_volume001 | 10 | standard | false | |

Attach volume (dashboard)

The screenshot shows the OpenStack dashboard interface for managing volumes. The browser address bar indicates the URL is `https://openstack.cern.ch/dashboard/project/volumes/`. The user is logged in as `belmiro`. The main content area displays a table of volumes with the following data:

| <input type="checkbox"/> | Name | Description | Size | Status | Type | Attached To | Actions |
|--------------------------|------------------------------|-------------|------|-----------|----------|-------------|---|
| <input type="checkbox"/> | my_volume002 | - | 10GB | Available | standard | | Edit Attachments More |
| <input type="checkbox"/> | my_volume001 | | 10GB | Available | standard | | Edit Attachments More |

Below the table, it indicates "Displaying 2 items". The left sidebar contains a navigation menu with the following items: Project, Manage Compute (Overview, Instances, Volumes, Images & Snapshots, Access & Security). A blue arrow labeled '1' points to the 'Volumes' menu item. Another blue arrow labeled '2' points to the 'Edit Attachments' button in the 'Actions' column of the 'my_volume001' row.

Attach volume (dashboard)

Manage Volume Attachments

Attachments

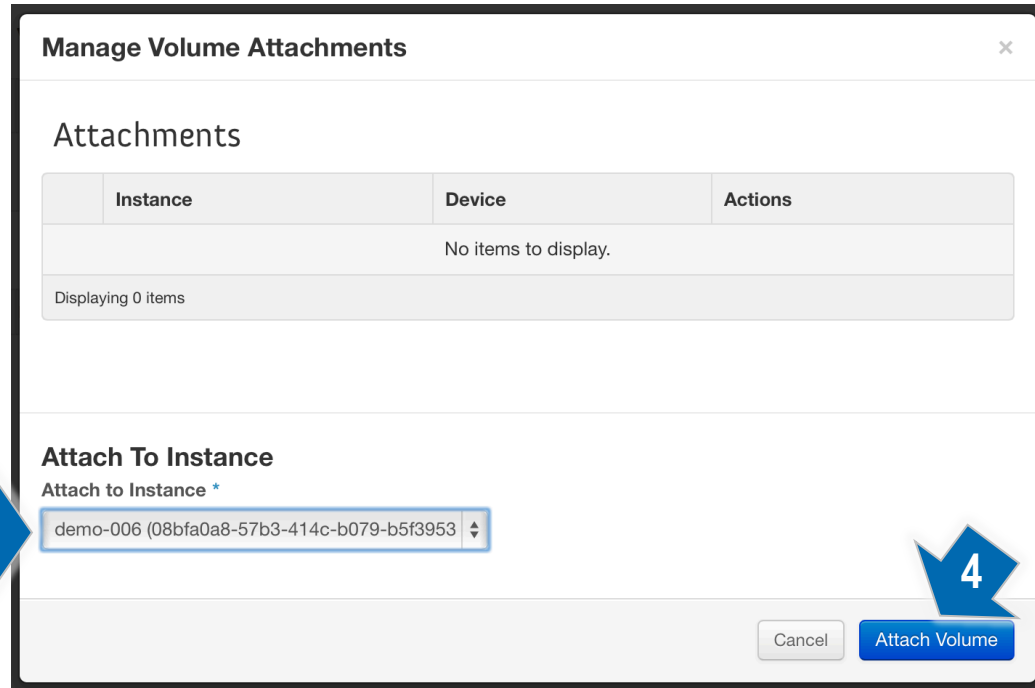
| Instance | Device | Actions |
|----------------------|--------|---------|
| No items to display. | | |
| Displaying 0 items | | |

Attach To Instance

Attach to Instance *

demo-006 (08bfa0a8-57b3-414c-b079-b5f3953)

Cancel Attach Volume



Attach volume (dashboard)

Volumes - CERN Cloud Infrastructure

Logged in as: belmiro [Settings](#) [Help](#) [Submit a ticket](#) [Sign Out](#)

Volumes

Filter [Filter](#) [+ Create Volume](#) [Delete Volumes](#)

| <input type="checkbox"/> | Name | Description | Size | Status | Type | Attached To | Actions |
|--------------------------|--------------|-------------|------|-----------|----------|--|---|
| <input type="checkbox"/> | my_volume002 | - | 10GB | Available | standard | | Edit Attachments More |
| <input type="checkbox"/> | my_volume001 | | 10GB | In-Use | standard | Attached to demo-006 on /dev/vdb | Edit Attachments |

Displaying 2 items

Project

CURRENT PROJECT
Cloud Test

Manage Compute

- Overview
- Instances
- Volumes**
- Images & Snapshots
- Access & Security

Attach volume (nova CLI)

To attach volume use:

```
"nova volume-attach <instance_uuid> <volume_uuid> auto
```

```
$ nova volume-attach 5c721948-0df4-412b-bc21-28c1448424b5 bc022ed7-cd80-41df-a819-fbaa3b9d4a3d auto
```

| Property | Value |
|----------|--------------------------------------|
| device | /dev/vdb |
| id | bc022ed7-cd80-41df-a819-fbaa3b9d4a3d |
| serverId | 5c721948-0df4-412b-bc21-28c1448424b5 |
| volumeId | bc022ed7-cd80-41df-a819-fbaa3b9d4a3d |

List all available volumes:

```
cinder list
```

| ID | Status | Display Name | Size | Volume Type | Bootable | Attached to |
|--------------------------------------|--------|--------------|------|-------------|----------|--------------------------------------|
| bc022ed7-cd80-41df-a819-fbaa3b9d4a3d | in-use | my_volume002 | 10 | standard | false | 5c721948-0df4-412b-bc21-28c1448424b5 |
| c2ea689e-7f2c-4490-9165-5a2a97a1cbc9 | in-use | my_volume001 | 10 | standard | false | 08bfa0a8-57b3-414c-b079-b5f3953d1263 |

How to delete instance

When deleting an instance the root disk and all ephemeral disks associated with the instance will be also deleted. It will not be possible to recover disk data afterwards.

If you want to keep your data you need to create a disk snapshot as described in this guide.

All attached volumes will be preserved after instance deletion.

How to delete instance (dashboard)

Instances – CERN Cloud Infrastructure

Logged in as: belmiro [Settings](#) [Help](#) [Submit a ticket](#) [Sign Out](#)

Instances

Filter Filter [+ Launch Instance](#) [Soft Reboot Instances](#) [Terminate Instances](#)

| <input type="checkbox"/> | Instance Name | Image Name | IP Address | Size | Keypair | Status | Task | Power State | Uptime | Actions |
|--------------------------|---------------|--|-----------------|---|------------|--------|------|-------------|------------------------|---|
| <input type="checkbox"/> | my-vm | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.241 | m1.tiny 512MB RAM 1 VCPU 0 Disk | my_keypair | Active | None | Running | 2 days, 17 hours | Create More <hr/> Console View Log Pause Instance Suspend Instance Resize Instance Soft Reboot Instance Hard Reboot Instance Shut Off Instance Rebuild Instance Terminate Instance |
| <input type="checkbox"/> | demo-005 | SLC6 Server - x86_64 [2014-01-30] | 188.184.149.30 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 4 days | |
| <input type="checkbox"/> | demo-004 | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.11 | m1.tiny 512MB RAM 1 VCPU | - | Active | None | Running | 2 weeks, 4 days | |

How to delete instance (nova CLI)

To delete an instance use "nova delete <instance_uuid>"

```
$ nova list
```

| ID | Name | Status | Task State | Power State | Networks |
|--------------------------------------|----------|--------|------------|-------------|------------------------------|
| 7a78ea0e-47bf-48fe-af62-157492285afa | demo-001 | ACTIVE | - | Running | CERN_NETWORK=188.184.149.211 |
| 063bb389-67b5-4125-85ce-0972473724dd | demo-002 | ACTIVE | - | Running | CERN_NETWORK=188.184.168.44 |
| 913f4c16-23a9-48a0-8070-07f9a8245283 | demo-003 | ACTIVE | - | Running | CERN_NETWORK=188.184.151.16 |
| 087d0047-d4b6-4fe8-8224-c13c599beed0 | demo-004 | ACTIVE | - | Running | CERN_NETWORK=188.184.148.11 |
| 5c721948-0df4-412b-bc21-28c1448424b5 | demo-005 | ACTIVE | - | Running | CERN_NETWORK=188.184.149.30 |
| 3e822ed1-e27c-4ef8-b84d-c02f00585d5c | my-vm | ACTIVE | - | Running | CERN_NETWORK=188.184.148.241 |

```
$ nova delete 7a78ea0e-47bf-48fe-af62-157492285afa
```

```
$ nova list
```

| ID | Name | Status | Task State | Power State | Networks |
|--------------------------------------|----------|--------|------------|-------------|------------------------------|
| 063bb389-67b5-4125-85ce-0972473724dd | demo-002 | ACTIVE | - | Running | CERN_NETWORK=188.184.168.44 |
| 913f4c16-23a9-48a0-8070-07f9a8245283 | demo-003 | ACTIVE | - | Running | CERN_NETWORK=188.184.151.16 |
| 087d0047-d4b6-4fe8-8224-c13c599beed0 | demo-004 | ACTIVE | - | Running | CERN_NETWORK=188.184.148.11 |
| 5c721948-0df4-412b-bc21-28c1448424b5 | demo-005 | ACTIVE | - | Running | CERN_NETWORK=188.184.149.30 |
| 3e822ed1-e27c-4ef8-b84d-c02f00585d5c | my-vm | ACTIVE | - | Running | CERN_NETWORK=188.184.148.241 |

How to hard reboot instance (dashboard)

Instances – CERN Cloud Infrastructure

Logged in as: belmiro [Settings](#) [Help](#) [Submit a ticket](#) [Sign Out](#)

Instances

Filter

| <input type="checkbox"/> | Instance Name | Image Name | IP Address | Size | Keypair | Status | Task | Power State | Uptime | Actions |
|--------------------------|---------------|--|-----------------|---|------------|--------|------|-------------|------------------------|---|
| <input type="checkbox"/> | my-vm | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.241 | m1.tiny 512MB RAM 1 VCPU 0 Disk | my_keypair | Active | None | Running | 2 days, 17 hours | <input type="button" value="Create Instance"/> <input type="button" value="More"/> <input type="button" value="Console"/> <input type="button" value="View Log"/> <input type="button" value="Pause Instance"/> <input type="button" value="Suspend Instance"/> <input type="button" value="Resize Instance"/> <input type="button" value="Soft Reboot Instance"/> <input type="button" value="Hard Reboot Instance"/> <input type="button" value="Shut Off Instance"/> <input type="button" value="Rebuild Instance"/> <input type="button" value="Terminate Instance"/> |
| <input type="checkbox"/> | demo-005 | SLC6 Server - x86_64 [2014-01-30] | 188.184.149.30 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 4 days | |
| <input type="checkbox"/> | demo-004 | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.11 | m1.tiny 512MB RAM 1 VCPU | - | Active | None | Running | 2 weeks, 4 days | |

How to hard reboot instance (nova CLI)

To hard reboot an instance use "nova reboot --hard <instance_uuid>"

```
$ nova list
```

| ID | Name | Status | Task State | Power State | Networks |
|--------------------------------------|----------|--------|------------|-------------|------------------------------|
| 7a78ea0e-47bf-48fe-af62-157492285afa | demo-001 | ACTIVE | - | Running | CERN_NETWORK=188.184.149.211 |
| 063bb389-67b5-4125-85ce-0972473724dd | demo-002 | ACTIVE | - | Running | CERN_NETWORK=188.184.168.44 |
| 913f4c16-23a9-48a0-8070-07f9a8245283 | demo-003 | ACTIVE | - | Running | CERN_NETWORK=188.184.151.16 |
| 087d0047-d4b6-4fe8-8224-c13c599beed0 | demo-004 | ACTIVE | - | Running | CERN_NETWORK=188.184.148.11 |
| 5c721948-0df4-412b-bc21-28c1448424b5 | demo-005 | ACTIVE | - | Running | CERN_NETWORK=188.184.149.30 |
| 3e822ed1-e27c-4ef8-b84d-c02f00585d5c | my-vm | ACTIVE | - | Running | CERN_NETWORK=188.184.148.241 |

```
$ nova reboot --hard 7a78ea0e-47bf-48fe-af62-157492285afa
```

| ID | Name | Status | Task State | Power State | Networks |
|--------------------------------------|----------|-------------|----------------|-------------|------------------------------|
| 7a78ea0e-47bf-48fe-af62-157492285afa | demo-001 | HARD_REBOOT | rebooting_hard | Running | CERN_NETWORK=188.184.149.211 |
| 063bb389-67b5-4125-85ce-0972473724dd | demo-002 | ACTIVE | - | Running | CERN_NETWORK=188.184.168.44 |
| 913f4c16-23a9-48a0-8070-07f9a8245283 | demo-003 | ACTIVE | - | Running | CERN_NETWORK=188.184.151.16 |
| 087d0047-d4b6-4fe8-8224-c13c599beed0 | demo-004 | ACTIVE | - | Running | CERN_NETWORK=188.184.148.11 |
| 5c721948-0df4-412b-bc21-28c1448424b5 | demo-005 | ACTIVE | - | Running | CERN_NETWORK=188.184.149.30 |
| 3e822ed1-e27c-4ef8-b84d-c02f00585d5c | my-vm | ACTIVE | - | Running | CERN_NETWORK=188.184.148.241 |

How to resize instance (dashboard)

The screenshot shows the OpenStack dashboard interface for managing instances. The left sidebar contains a navigation menu with the following items: Project, Manage Compute, Overview, Instances (highlighted with arrow 1), Volumes, Images & Snapshots, and Access & Security. The main content area is titled 'Instances' and includes a search filter, a '+ Launch Instance' button, and buttons for 'Soft Reboot Instances' and 'Terminate Instances'. A table lists three instances:

| Instance Name | Image Name | IP Address | Size | Keypair | Status | Task | Power State | Uptime | Actions |
|---------------|-----------------------------------|-----------------|---------------------------------------|------------|--------|------|-------------|------------------|---|
| my-vm | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.241 | m1.tiny 512MB RAM 1 VCPU 0 Disk | my_keypair | Active | None | Running | 2 days, 17 hours | More (arrow 2) |
| demo-005 | SLC6 Server - x86_64 [2014-01-30] | 188.184.149.30 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 4 days | Console, View Log, Pause Instance, Suspend Instance, Resize Instance (arrow 3), Soft Reboot Instance, Hard Reboot Instance, Shut Off Instance, Rebuild Instance, Terminate Instance |
| demo-004 | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.11 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 4 days | |

How to resize instance (dashboard)

Resize Instance

Flavor Choice *

Old Flavor
m1.tiny

New Flavor *

- Select an New Flavor
- m1.tiny
- m1.small**
- m1.medium
- m1.large
- win.small
- win.medium
- win.large

Flavor Details

| | |
|----------------|----|
| Name | |
| VCPUs | |
| Root Disk | GB |
| Ephemeral Disk | GB |
| Total Disk | GB |
| RAM | MB |

Project Limits

Number of Instances 6 of 50 Used

Number of VCPUs 6 of 50 Used

Total RAM 3,072 of 102,400 MB Used

Cancel **Resize**

How to resize instance (nova CLI)

"nova resize <instance_uuid> <flavor>"

```
$ nova show 7a78ea0e-47bf-48fe-af62-157492285afa
```

| Property | Value |
|--------------------------------------|--|
| CERN_NETWORK network | 188.184.149.211 |
| OS-DCF:diskConfig | MANUAL |
| OS-EXT-AZ:availability_zone | nova |
| OS-EXT-STS:power_state | 1 |
| OS-EXT-STS:task_state | - |
| OS-EXT-STS:vm_state | active |
| OS-SRV-USG:launched_at | 2014-02-26T22:27:29.000000 |
| OS-SRV-USG:terminated_at | - |
| config_drive | |
| created | 2014-02-26T22:24:18Z |
| flavor | m1.tiny (1) |
| hostId | 859af9ab61d4627edbf8dee026e5124c4e6220545b5fabdd30e564dd |
| id | 7a78ea0e-47bf-48fe-af62-157492285afa |
| image | SLC6 Server - x86_64 [2014-01-30] (321b8583-967f-4f56-913e-2a10e058ff37) |
| key_name | - |
| metadata | {"cern-services": "false"} |
| name | demo-001 |
| os-extended-volumes:volumes_attached | [] |
| progress | 0 |
| security_groups | default |
| status | ACTIVE |
| tenant_id | 4d679467-f828-41bc-90fa-ef8633594a6f |
| updated | 2014-03-19T12:46:25Z |
| user_id | belmiro |

```
$ nova resize 7a78ea0e-47bf-48fe-af62-157492285afa m1.small
```

How to resize instance (nova CLI)

After resize check if instance is OK.

Confirming resize will delete old instance disk files.

```
$ nova list
```

| ID | Name | Status | Task State | Power State | Networks |
|---|----------|---------------|------------|-------------|------------------------------|
| 7a78ea0e-47bf-48fe-af62-157492285afa (...) | demo-001 | VERIFY_RESIZE | - | Running | CERN_NETWORK=188.184.149.211 |

```
$ nova show 7a78ea0e-47bf-48fe-af62-157492285afa
```

| Property | Value |
|-----------------------------|--------------------------------------|
| CERN_NETWORK network | 188.184.149.211 |
| OS-DCF:diskConfig | MANUAL |
| OS-EXT-AZ:availability_zone | nova |
| OS-EXT-STS:power_state | 1 |
| OS-EXT-STS:task_state | - |
| OS-EXT-STS:vm_state | resized |
| (...) | |
| flavor | m1.small (2) |
| id | 7a78ea0e-47bf-48fe-af62-157492285afa |
| (...) | |

```
$ nova resize-confirm 7a78ea0e-47bf-48fe-af62-157492285afa
```

Create instance image snapshot (dashboard)

The screenshot shows the OpenStack dashboard for CERN Cloud Infrastructure. On the left, a navigation sidebar is visible with a blue arrow labeled '1' pointing to the 'Instances' link under the 'Manage Compute' section. The main content area is titled 'Instances' and includes a search filter, a '+ Launch Instance' button, and buttons for 'Soft Reboot Instances' and 'Terminate Instances'. A table lists three instances: 'demo-006', 'my-vm', and 'demo-005'. A blue arrow labeled '2' points to the 'Create Snapshot' button in the 'Actions' column of the 'demo-006' row.

| Instance Name | Image Name | IP Address | Size | Keypair | Status | Task | Power State | Uptime | Actions |
|---------------|-----------------------------------|-----------------|---------------------------------------|------------|--------|------|-------------|---------------------|-------------------------|
| demo-006 | SLC6 Server - x86_64 [2014-01-30] | 188.184.151.151 | m1.tiny 512MB RAM 1 VCPU 0 Disk | my_keypair | Active | None | Running | 6 hours, 57 minutes | Create Snapshot More |
| my-vm | SLC6 Server - x86_64 [2014-01-30] | 188.184.148.241 | m1.tiny 512MB RAM 1 VCPU 0 Disk | my_keypair | Active | None | Running | 4 days, 22 hours | Create Snapshot More |
| demo-005 | SLC6 Server - x86_64 [2014-01-30] | 188.184.149.30 | m1.tiny 512MB RAM 1 VCPU 0 Disk | - | Active | None | Running | 2 weeks, 6 days | Create Snapshot More |

Create instance image snapshot (dashboard)

Create Snapshot ×

Snapshot Name *
demo-006-snapshot

Description:
Snapshots preserve the disk state of a running instance.

Cancel Create Snapshot

Create instance image snapshot (dashboard)

The screenshot shows the OpenStack dashboard interface for 'Images & Snapshots'. The browser address bar indicates the URL is `https://openstack.cern.ch/dashboard/project/images_and_snapshots/`. The user is logged in as 'belmiro'. The left sidebar contains a navigation menu with the following items: Project, Manage Compute (with sub-items: Overview, Instances, Volumes, Images & Snapshots, and Access & Security), and a 'CURRENT PROJECT Cloud Test' dropdown. A blue arrow with the number '5' points to the 'Images & Snapshots' menu item.

The main content area is titled 'Images & Snapshots' and includes the following elements:

- Navigation tabs: Project (1), Shared with Me (1), Public (25)
- Buttons: + Create Image, Delete Images
- Table of Images:

| <input type="checkbox"/> | Image Name | Type | Status | Public | Protected | Format | Actions |
|--------------------------|-------------------|----------|---|--------|-----------|--------|--------------|
| <input type="checkbox"/> | demo-006-snapshot | Snapshot | <div style="width: 50%; background-color: #ccc;">Saving</div> | No | No | QCOW2 | Delete Image |

Displaying 1 item

Volume Snapshots

| Name | Description | Size | Status | Volume Name | Actions |
|----------------------|-------------|------|--------|-------------|---------|
| No items to display. | | | | | |

Displaying 0 items

Create instance image snapshot (nova CLI)

To create instance image snapshot use:

```
"nova image-create <instance_uuid> <snapshot_name>
```

```
nova image-create 08bfa0a8-57b3-414c-b079-b5f3953d1263 demo-006-snapshot
```

List image snapshot with:

```
$ glance image-list
```

| ID | Name | Disk Format | Container Format | Size | Status |
|--------------------------------------|-------------------|-------------|------------------|------------|--------|
| 9207a644-f390-43a8-911d-19bd74f136f5 | demo-006-snapshot | qcow2 | bare | 2468937728 | active |
| (...) | | | | | |

Availability Zones (nova CLI)

Logical separation for application deployment. Allows application redundancy.

List all availability zones:

```
$ nova availability-zone-list
+-----+-----+
| Name           | Status   |
+-----+-----+
| cern-geneva-a  | available|
| cern-geneva-b  | available|
| cern-geneva-c  | available|
+-----+-----+
```

Create instance in a specific availability zone. Use `--availability-zone`

```
$ nova boot --image 321b8583-967f-4f56-913e-2a10e058ff37 --flavor m1.tiny --key-name my_keypair
--availability-zone cern-geneva-a my-vm
```

Availability Zones (dashboard)

Launch Instance

Details * Access & Security * Post-Creation

Availability Zone

Any Availability Zone

✓ Any Availability Zone

cern-geneva-a

cern-geneva-b

cern-geneva-c

Flavor *

m1.tiny

Instance Count *

1

Instance Boot Source *

--- Select source ---

Specify the details for launching an instance.

The chart below shows the resources used by this project in relation to the project's quotas.

Flavor Details

| | |
|----------------|---------|
| Name | m1.tiny |
| VCPUs | 1 |
| Root Disk | 0 GB |
| Ephemeral Disk | 0 GB |
| Total Disk | 0 GB |
| RAM | 512 MB |

Project Limits

Number of Instances 5 of 50 Used

Number of VCPUs 5 of 50 Used

Total RAM 2,560 of 102,400 MB Used

Cancel Launch

CERN specific options

Create instance without waiting for DNS propagation (nova CLI)

The VM will only boot when the hostname is known by the DNS infrastructure.
It can take more than 10 minutes.

To skip this waiting time you can use the metadata:

"--meta cern-services=false"

```
$ nova boot --image 321b8583-967f-4f56-913e-2a10e058ff37 --flavor m1.tiny --key-name my_keypair --meta cern-services=false demo-006
```

CERN specific options

Create instance with specific landb “user”/“responsible” (nova CLI)

The "Main User" and "Responsible" of a device in LanDB can be configured at instance creation time. By default it's the user that created the instance.

Use the metadata:

```
"--meta landb-mainuser=<user or egroup>"
```

```
"--meta landb-responsible=<user or egroup>"
```

```
nova boot --image 321b8583-967f-4f56-913e-2a10e058ff37 --flavor m1.tiny --key-name my_keypair  
--meta landb-mainuser="ai-openstack-newcomers" --meta landb-responsible="ai-openstack-newcomers" demo-007
```

CERN specific options

Change landb “user”/“responsible” of existing instances (nova CLI)

LanDB updates for devices created by OpenStack can't be performed directly in the LanDB interface.



This device is externally managed!

The device **DEMO-006** is externally managed by a service provider.
You cannot change any of the information registered for this device using this interface.

Please, for modifying its attributes use the appropriate service provider for this device.

To change the "Main User" and "Responsible" of an existing device in LanDB created by OpenStack use:

"nova meta <instance_uuid> set"

- "landb-mainuser=<user or egroup>"
- "landb-responsible=<user or egroup>"

CERN specific options

Change landb “user”/“responsible” of existing instances (nova CLI)

Device Information

- **Device Name:** DEMO-006 [Last Operation]
- **Location:** 0000 0-0000 (Zone: 0000)
- **Manufacturer:** KVM
- **Model/Type:** VIRTUAL MACHINE
- **Generic Type:** COMPUTER
- **Description:**
- **Tag:** OPENSTACK VM
- **Serial Number:**
- **Operating System:** LINUX Version: UNKNOWN
- **CERN Inventory number:**
- **Network Interface Card(s):** [REDACTED]
- **Responsible for the device:** RODRIGUES MOREIRA BELMIRO DANIEL IT OIS
BELMIRO.MOREIRA@CERN.CH / Tlf: 73068
- **Main User of the device:** RODRIGUES MOREIRA BELMIRO DANIEL IT OIS
BELMIRO.MOREIRA@CERN.CH / Tlf: 73068
- This machine is a virtual machine
- **VM running on:** P01001492930559
- **HCP Response:** This system **CAN** obtain an IP address automatically [[more info](#)]
- **IPv6 Ready:** This system **IS NOT** IPv6 ready
- **Last changed:** 19-03-2014 (14:35)

CERN specific options

Change landb “user”/“responsible” of existing instances (nova CLI)

```
$ nova meta 08bfa0a8-57b3-414c-b079-b5f3953d1263 set landb-mainuser="ai-openstack-newcomers"
```

```
$ nova meta 08bfa0a8-57b3-414c-b079-b5f3953d1263 set landb-responsible="ai-openstack-newcomers"
```

Device Information

- **Device Name:** DEMO-006 [Last Operation]
- **Location:** 0000 0-0000 (Zone: 0000)
- **Manufacturer:** KVM
- **Model/Type:** VIRTUAL MACHINE
- **Generic Type:** COMPUTER
- **Description:**
- **Tag:** OPENSTACK VM
- **Serial Number:**
- **Operating System:** LINUX Version: UNKNOWN
- **CERN Inventory number:**
- **Network Interface Card(s):** [REDACTED]
- **Responsible for the device:** AI-OPENSTACK-NEWCOMERS E-GROUP IT OIS
AI-OPENSTACK-NEWCOMERS@CERN.CH / Tif: 73068
- **Main User of the device:** AI-OPENSTACK-NEWCOMERS E-GROUP IT OIS
AI-OPENSTACK-NEWCOMERS@CERN.CH / Tif: 73068
- This machine is a virtual machine
- **VM running on:** P01001492930559
- **HCP Response:** This system **CAN** obtain an IP address automatically [[more info](#)]
- **IPv6 Ready:** This system **IS NOT** IPv6 ready
- **Last changed:** 19-03-2014 (16:45)

CERN specific options

Change landb “user”/“responsible” of existing instances (nova CLI)

If you delete the "mainuser" or "responsible" instance metadata, LanDB will be updated to the user that created the instance.

```
"nova meta <instance_uuid> delete"
```

- "landb-mainuser"
- "landb-responsible"

```
$ nova meta 08bfa0a8-57b3-414c-b079-b5f3953d1263 delete landb-responsible
```

CERN specific options

Change landb “user”/“responsible” of existing instances (nova CLI)

Device Information

- **Device Name:** DEMO-006 [Last Operation]
- **Location:** 0000 0-0000 (Zone: 0000)
- **Manufacturer:** KVM
- **Model/Type:** VIRTUAL MACHINE
- **Generic Type:** COMPUTER
- **Description:**
- **Tag:** OPENSTACK VM
- **Serial Number:**
- **Operating System:** LINUX Version: UNKNOWN
- **CERN Inventory number:**
- **Network Interface Card(s):** [REDACTED]
- **Responsible for the device:** RODRIGUES MOREIRA BELMIRO DANIEL IT OIS
BELMIRO.MOREIRA@CERN.CH / Tlf: 73068
- **Main User of the device:** AI-OPENSTACK-NEWCOMERS E-GROUP IT OIS
AI-OPENSTACK-NEWCOMERS@CERN.CH / Tlf: 73068
- This machine is a virtual machine
- **VM running on:** P01001492930559
- **HCP Response:** This system **CAN** obtain an IP address automatically [[more info](#)]
- **IPv6 Ready:** This system **IS NOT** IPv6 ready
- **Last changed:** 19-03-2014 (16:52)

CERN specific options

Add/remove aliases in existing instances (nova CLI)

To add/remove aliases in an OpenStack instance use:

```
"nova meta <instance_uuid> set landb-alias=<comma_separated_list>"
```

```
$ nova meta 08bfa0a8-57b3-414c-b079-b5f3953d1263 set landb-alias="alias001"
```

```
$ nova meta 08bfa0a8-57b3-414c-b079-b5f3953d1263 set landb-alias="alias001,alias002,alias003,alias004"
```

```
$ nova meta 08bfa0a8-57b3-414c-b079-b5f3953d1263 set landb-alias="alias003,alias005"
```

To delete all alias use:

```
"nova meta <instance_uuid> delete landb-alias"
```

```
$ nova meta 08bfa0a8-57b3-414c-b079-b5f3953d1263 delete landb-alias
```

How to upload image file (dashboard)

The screenshot shows the OpenStack dashboard interface for 'Images & Snapshots'. The browser address bar indicates the URL is https://openstack.cern.ch/dashboard/project/images_and_snapshots/. The user is logged in as 'belmiro'. The main content area displays a table of images with columns for Image Name, Type, Status, Public, Protected, Format, and Actions. A '+ Create Image' button is visible in the top right of the main content area, and a 'Delete Images' button is also present. The left sidebar contains navigation options: Project (Cloud Test), Manage Compute (Overview, Instances, Volumes, Images & Snapshots, Access & Security).

| <input type="checkbox"/> | Image Name | Type | Status | Public | Protected | Format | Actions |
|--------------------------|--|-------|--------|--------|-----------|--------|---------------|
| <input type="checkbox"/> | SLC6 Server - x86_64 [2014-01-30] | Image | Active | Yes | No | QCOW2 | Launch More ▾ |
| <input type="checkbox"/> | SLC6 Server - i686 [2014-01-30] | Image | Active | Yes | No | QCOW2 | Launch More ▾ |
| <input type="checkbox"/> | SLC6 CERN Server - x86_64 [2014-01-30] | Image | Active | Yes | No | QCOW2 | Launch More ▾ |
| <input type="checkbox"/> | SLC6 CERN Server - i686 [2014-01-30] | Image | Active | Yes | No | QCOW2 | Launch More ▾ |
| <input type="checkbox"/> | SLC5 Server - x86_64 [2014-01-30] | Image | Active | Yes | No | QCOW2 | Launch More ▾ |
| <input type="checkbox"/> | SLC5 Server - i386 [2014-01-30] | Image | Active | Yes | No | QCOW2 | Launch More ▾ |
| <input type="checkbox"/> | SLC5 CERN Server - x86_64 [2014-01-30] | Image | Active | Yes | No | QCOW2 | Launch More ▾ |
| <input type="checkbox"/> | SLC5 CERN Server - i386 [2014-01-30] | Image | Active | Yes | No | QCOW2 | Launch More ▾ |

How to upload image file (dashboard)

Create An Image [X]

3 **Name ***
my_image001

Description
Additional information here...

4 **Image Source ***
Image File

Image File
Choose File cirros-0.3.0-x86_64-disk.img

5 **Format ***
QCOW2 - QEMU Emulator

Minimum Disk (GB)
[]

Minimum Ram (MB)
[]

Public

Protected

6

Cancel Create Image

Description:
Specify an image to upload to the Image Service.
Currently only images available via an HTTP URL are supported. The image location must be accessible to the Image Service. Compressed image binaries are supported (.zip and .tar.gz).
Please note: The Image Location field MUST be a valid and direct URL to the image binary. URLs that redirect or serve error pages will result in unusable images.

How to upload image file (dashboard)

Images & Snapshots – CERN Cloud Infrastructure

Logged in as: belmiro [Settings](#) [Help](#) [Submit a ticket](#) [Sign Out](#)

Images & Snapshots

Project (1) Shared with Me (0) Public (25) [+ Create Image](#) [Delete Images](#)

| <input type="checkbox"/> | Image Name | Type | Status | Public | Protected | Format | Actions |
|--------------------------|-------------|-------|--------|--------|-----------|--------|---|
| <input type="checkbox"/> | my_image001 | Image | Active | No | No | QCOW2 | Launch More |

Displaying 1 item

Volume Snapshots

| Name | Description | Size | Status | Volume Name | Actions |
|----------------------|-------------|------|--------|-------------|---------|
| No items to display. | | | | | |

Displaying 0 items

Project

CURRENT PROJECT
Cloud Test

Manage Compute

- Overview
- Instances
- Volumes
- Images & Snapshots**
- Access & Security

How to upload image file (glance CLI)

To upload image file to glance use:

```
"glance image-create --name <image_name> --disk-format <disk_format>  
--container-format <container_format> --file <path_to_local_file>"
```

```
$ glance image-create --name my_image001 --disk-format qcow2 --container-format bare --file cirros.0.3.0.disk.img
```

List all available images using glance CLI with:

```
$ glance image-list  
+-----+-----+-----+-----+-----+  
| ID | Name | Disk Format | Container Format | Size | Status |  
+-----+-----+-----+-----+-----+  
| 323ef4d2-da32-4c88-a985-87ae32b588fc | my_image001 | qcow2 | bare | 9761280 | active |  
(...)
```

How to delete image (dashboard)

The screenshot shows the OpenStack dashboard interface for 'Images & Snapshots'. The page title is 'Images & Snapshots - CERN Cloud Infrastructure'. The user is logged in as 'belmiro'. The main content area is divided into two sections: 'Images' and 'Volume Snapshots'.

Images Section:

- Buttons: Project (2), Shared with Me (0), Public (25), + Create Image, Delete Images
- Table with 2 items:

| <input type="checkbox"/> | Image Name | Type | Status | Public | Protected | Format | Actions |
|--------------------------|-------------|-------|--------|--------|-----------|--------|-------------|
| <input type="checkbox"/> | my_image002 | Image | Active | No | No | QCOW2 | Launch More |
| <input type="checkbox"/> | my_image001 | Image | Active | No | No | QCOW2 | More |

Displaying 2 items

Volume Snapshots Section:

| Name | Description | Size | Status | Volume Name | Actions |
|----------------------|-------------|------|--------|-------------|---------|
| No items to display. | | | | | |

Displaying 0 items

Callouts:

- 1: Points to the 'Images & Snapshots' menu item in the left sidebar.
- 2: Points to the 'Images' section header.
- 3: Points to the 'Delete Images' button.
- 4: Points to the 'Delete Image' option in the actions dropdown menu.

How to delete image (glance CLI)

To delete an image use:

```
"glance image-delete <image_uuid>
```

```
$ glance image-delete 323ef4d2-da32-4c88-a985-87ae32b588fc
```

Share images between tenants (glance CLI)

Images can be shared between different tenants.

Select the image and the tenant to share with. Use:

```
"glance member-create <image_uuid> <tenant_uuid>
```

```
glance member-create d294212a-d9b9-4d3b-ac45-a09016e6f5b1 4d679467-f828-41bc-90fa-ef8633594a6x
```

List all shared images with:

```
"glance member-list --tenant-id <tenant_uuid>
```

```
$ glance member-list --tenant-id 4d679467-f828-41bc-90fa-ef8633594a6f
+-----+-----+-----+
| Image ID | Member ID | Can Share |
+-----+-----+-----+
| d294212a-d9b9-4d3b-ac45-a09016e6f5b1 | 4d679467-f828-41bc-90fa-ef8633594a6f | |
+-----+-----+-----+
```

Share images between tenants (dashboard)

View images that are provided by other tenants

The screenshot shows the OpenStack dashboard interface for 'Images & Snapshots'. The left sidebar contains a navigation menu with the following items: Project, Manage Compute (with sub-items: Overview, Instances, Volumes), Images & Snapshots (highlighted with a blue arrow labeled '1'), and Access & Security. The main content area is titled 'Images & Snapshots' and shows a table of images. The table has columns for Image Name, Type, Status, Public, Protected, Format, and Actions. One image is listed: 'CentOS 6.5 - x86_64'. Above the table, there are filter buttons for 'Project (1)', 'Shared with Me (1)' (highlighted with a blue arrow labeled '2'), and 'Public (25)'. There are also buttons for '+ Create Image' and 'Delete Images'. Below the image table, there is a section for 'Volume Snapshots' which is currently empty, displaying 'No items to display'.

| Image Name | Type | Status | Public | Protected | Format | Actions |
|---------------------|-------|--------|--------|-----------|--------|-------------|
| CentOS 6.5 - x86_64 | Image | Active | No | No | QCOW2 | Launch More |

| Name | Description | Size | Status | Volume Name | Actions |
|----------------------|-------------|------|--------|-------------|---------|
| No items to display. | | | | | |

What's next...

This guide is only a brief OpenStack introduction for users.

For more information:

- <http://docs.openstack.org>
- <https://information-technology.web.cern.ch/book/cern-private-cloud-user-guide>

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