

NCITA XNAT Cambridge Repository



<https://ncita.xnat.radiology.medschl.cam.ac.uk/>

Welcome to the **NCITA XNAT of the University of Cambridge!**

This is a repository of imaging data of radiological images for cancer research. This repository is for anonymised data only and for research use only. Patient-identifiable data should never be uploaded to this server or any clinical decisions made on the basis of information contained here.

If you have any questions or problems, please contact us at ncita.xnat.ucam@gmail.com

USER


PASSWORD

[Register](#) [Forgot login or password?](#) [Login](#)

Lorena Escudero, January 2020



0 - OPENSTACK FRAMEWORK



RED HAT® OPENSTACK PLATFORM

If you are not sure which authentication method to use, contact your administrator.

Domain *

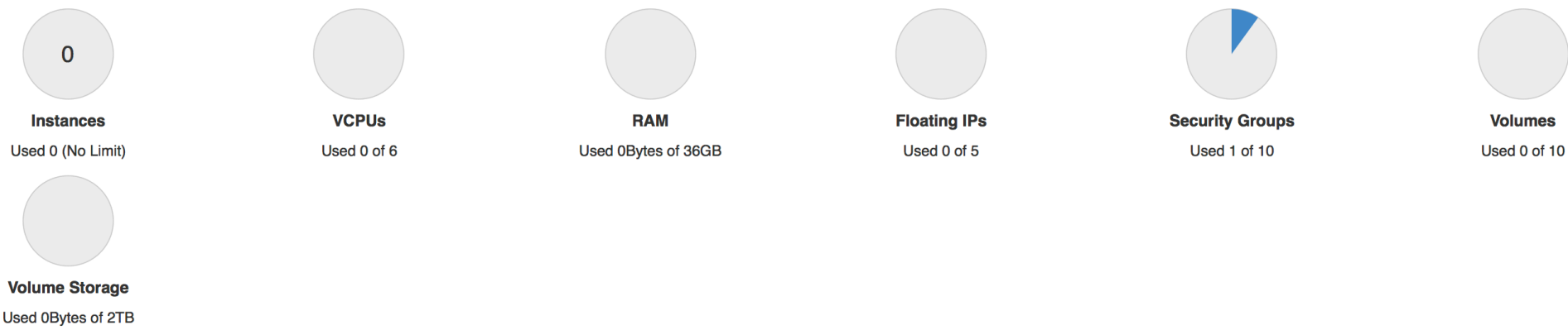
User Name *

Password *

Connect

Overview

Limit Summary



Starting point

Usage Summary

Select a period of time to query its usage:

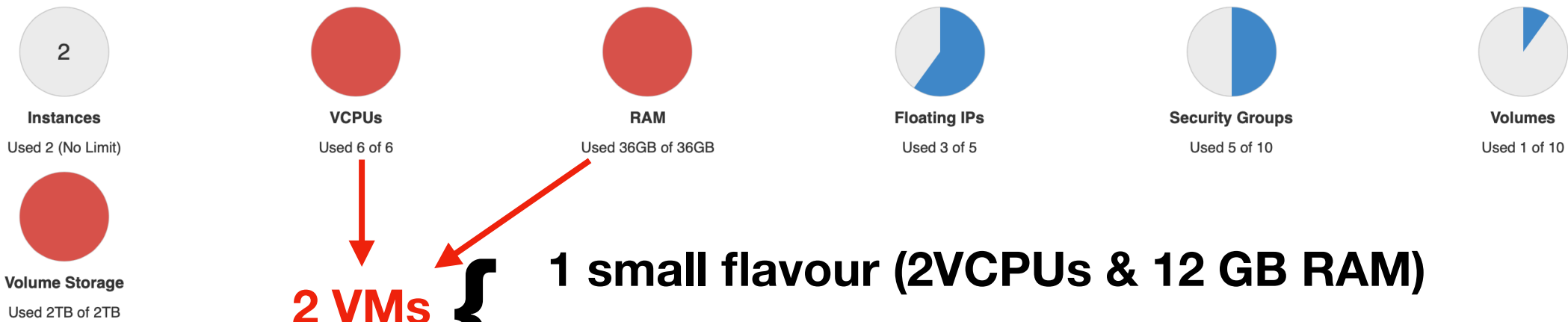
From: To: The date should be in YYYY-MM-DD format.

Active Instances: 0 Active RAM: 0Bytes This Period's VCPU-Hours: 0.00 This Period's GB-Hours: 0.00 This Period's RAM-Hours: 0.00

Overview

Limit Summary

Resources used



2 VMs

1 small flavour (2VCPUs & 12 GB RAM)
1 medium flavour (4VCPUs & 24 GB RAM)

2 TB

1 - NETWORK

Network Topology

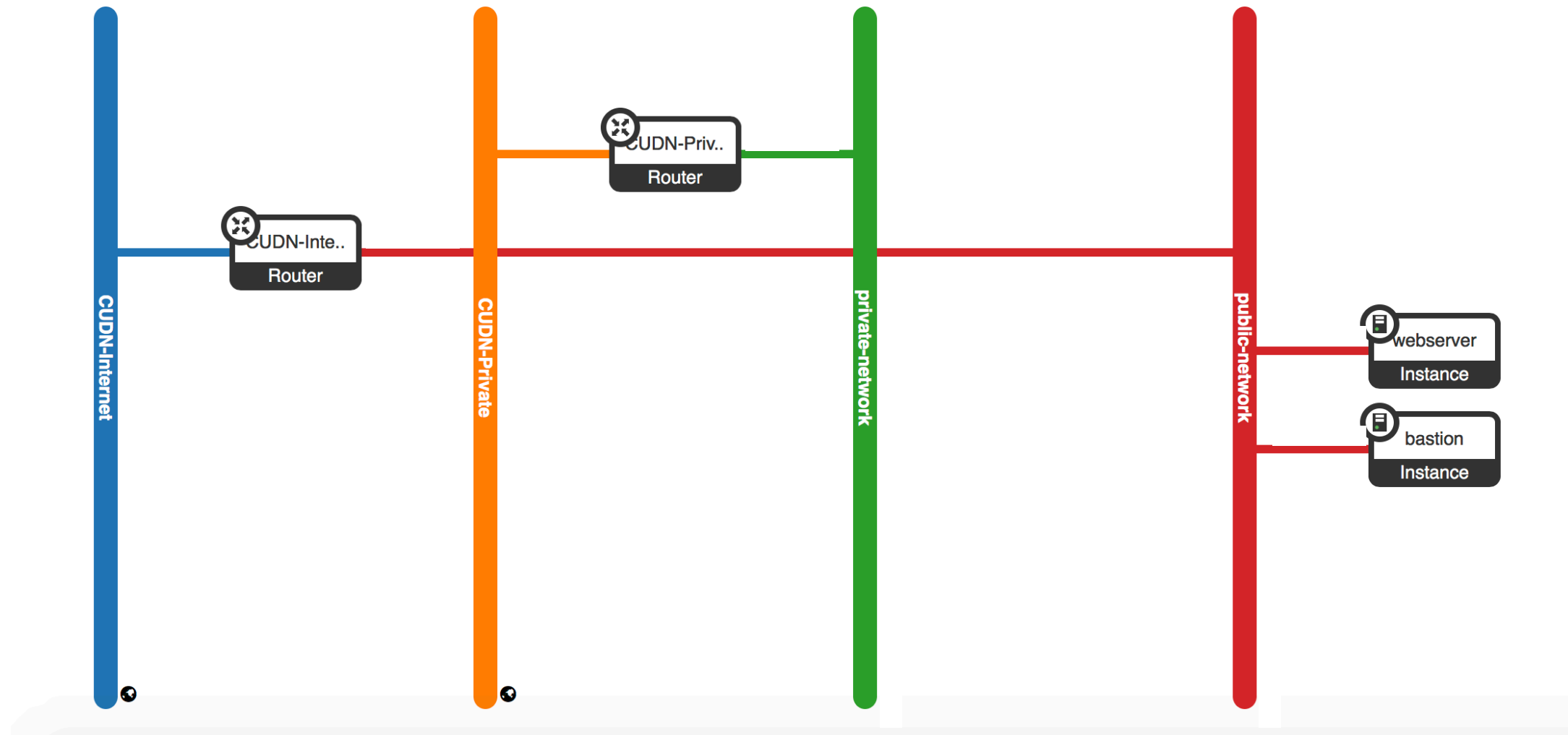
[Launch Instance](#)

Topology

Graph

Small

Normal



The system is implemented such that **we can't access (SSH) directly the webserver VM, instead we need to bounce through a bastion**. Both need to be in the same internal network (public-network). The webserver has a **public floating IP (world-wide reachable)**, so routed to the CUDN-Internet.

1 - NETWORK

However, the access to the bastion is restricted to only the Cambridge Network, by specifying IP groups in the SSH rule of the external-bastion Security Group. This means it is only possible to SSH into the bastion (or ICMP) from Cambridge Network (or VPN) with a unique key pair.

Manage Security Group Rules external-bastion

+ Add RuleDelete Rules

| <input type="checkbox"/> | Direction | Ether Type | IP Protocol | Port Range | Remote IP Prefix | Remote Security Group | Actions |
|--------------------------|-----------|------------|-------------|------------|------------------|-----------------------|-------------|
| <input type="checkbox"/> | Egress | IPv4 | Any | Any | 0.0.0.0/0 | - | Delete Rule |
| <input type="checkbox"/> | Egress | IPv6 | Any | Any | :::0 | - | Delete Rule |
| <input type="checkbox"/> | Ingress | IPv4 | ICMP | Any | 172.24.0.0/14 | - | Delete Rule |
| <input type="checkbox"/> | Ingress | IPv4 | ICMP | Any | 172.16.0.0/13 | - | Delete Rule |
| <input type="checkbox"/> | Ingress | IPv4 | ICMP | Any | 172.28.0.0/15 | - | Delete Rule |
| <input type="checkbox"/> | Ingress | IPv4 | ICMP | Any | 172.30.0.0/16 | - | Delete Rule |
| <input type="checkbox"/> | Ingress | IPv4 | ICMP | Any | 10.128.0.0/9 | - | Delete Rule |
| <input type="checkbox"/> | Ingress | IPv4 | TCP | 22 (SSH) | 172.24.0.0/14 | - | Delete Rule |
| <input type="checkbox"/> | Ingress | IPv4 | TCP | 22 (SSH) | 172.16.0.0/13 | - | Delete Rule |
| <input type="checkbox"/> | Ingress | IPv4 | TCP | 22 (SSH) | 10.128.0.0/9 | - | Delete Rule |
| <input type="checkbox"/> | Ingress | IPv4 | TCP | 22 (SSH) | 172.30.0.0/16 | - | Delete Rule |
| <input type="checkbox"/> | Ingress | IPv4 | TCP | 22 (SSH) | 172.28.0.0/15 | - | Delete Rule |

These properties make UDN-wide private addresses ideal for client-only devices, such as end-user devices, including those on the [University Wireless Service \(captive portal \[UniOfCam\] and eduroam\)](#).

The ranges currently in use are:

| Range | Comments / use |
|---------------|---|
| 10.128.0.0/9 | Institutional allocations. Changed status from <i>Reserved</i> in September 2015. |
| 172.16.0.0/13 | Institutional allocations, including University Telephone Network |
| 172.24.0.0/14 | |
| 172.28.0.0/15 | |
| 172.30.0.0/16 | Management networks used by the UDN, University Wireless, etc. |

1 - NETWORK

Manage Security Group Rules: external-webserver

| | | | | | | | + Add Rule | Delete Rules |
|--------------------------|-----------|------------|-------------|-------------|------------------|-----------------------|-----------------------------|------------------------------|
| <input type="checkbox"/> | Direction | Ether Type | IP Protocol | Port Range | Remote IP Prefix | Remote Security Group | Actions | |
| <input type="checkbox"/> | Egress | IPv6 | Any | Any | ::/0 | - | Delete Rule | |
| <input type="checkbox"/> | Egress | IPv4 | Any | Any | 0.0.0.0/0 | - | Delete Rule | |
| <input type="checkbox"/> | Ingress | IPv4 | ICMP | Any | 172.30.0.0/16 | - | Delete Rule | |
| <input type="checkbox"/> | Ingress | IPv4 | ICMP | Any | 172.28.0.0/15 | - | Delete Rule | |
| <input type="checkbox"/> | Ingress | IPv4 | ICMP | Any | 10.128.0.0/9 | - | Delete Rule | |
| <input type="checkbox"/> | Ingress | IPv4 | ICMP | Any | 172.16.0.0/13 | - | Delete Rule | |
| <input type="checkbox"/> | Ingress | IPv4 | ICMP | Any | 172.24.0.0/14 | - | Delete Rule | |
| <input type="checkbox"/> | Ingress | IPv4 | TCP | 80 (HTTP) | 0.0.0.0/0 | - | Delete Rule | |
| <input type="checkbox"/> | Ingress | IPv4 | TCP | 443 (HTTPS) | 0.0.0.0/0 | - | Delete Rule | |

Displaying 9 items

HTTP is allowed from everywhere though in the external SG,
so that the site is reachable from anywhere

2 - INSTANCES

Using Ubuntu 18.04. LTS (Bionic Beaver) from bionic-server-cloudimg-amd64

There is another Ubuntu option available: 16.04 (Xenial Xerus)

bastion

Overview

Log

Console

Action Log

Name

bastion

ID

Status

Active

Availability Zone

nova-1-wcdc

Created

21 Jan 2020, 5:34 p.m.

Time Since Created

17 hours, 50 minutes

Specs

Flavour Name

C1.vss.small

Flavour ID

RAM

12GB

VCPUs

2 VCPU

Disk

30GB

webserver

Overview

Log

Console

Action Log

Name

ID

Status

Availability Zone

Created

Time Since Created

webserver

Active

nova-1-wcdc

21 Jan 2020, 5:47 p.m.

17 hours, 47 minutes

Specs

Flavour Name

Flavour ID

RAM

VCPUs

Disk

C1.vss.medium

24GB

4 VCPU

60GB

3 - XNAT

https://github.com/ncita-repository/WP3_infrastructure/blob/master/docs/XNAT_StepByStepInstall.md

| Package | Version | Comment |
|----------------|-----------------------------|---|
| Ubuntu | 18.04.1 LTS (Bionic Beaver) | GNU/Linux 4.15.0-38-generic x86_64 |
| Java (openjdk) | 1.8.0_232 | Via apt (openjdk-8-jre-headless) |
| PostgreSQL | 10 | https://www.postgresql.org/download/linux/debian/ |
| Tomcat | 7.0.99 | Via apt |
| XNAT | 1.7.6 | bitbucket |



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3 - XNAT & chrony

As we know now, we need to install **chrony** to handle time differences in the **VM clock** when the VM is restarted, which can be tiny, but still makes the user session to constantly expire

From the XNAT-discussion Google group:

[https://groups.google.com/forum/#!searchin/xnat_discussion/session\\$20timeout%7Csort:date/xnat_discussion/4k73efu-8eo/IUxnefLuDAAJ](https://groups.google.com/forum/#!searchin/xnat_discussion/session$20timeout%7Csort:date/xnat_discussion/4k73efu-8eo/IUxnefLuDAAJ)

```
sudo -i
apt-get install chrony
systemctl stop chrony.service
mv /etc/chrony/chrony.conf /etc/chrony/chrony.conf.bak
wget -O /etc/chrony/chrony.conf https://bitbucket.org/rherrick/xnat-vagrant/raw/09295f0527a26981efec3fb8b570dc37b1f8531f/templates/chrony.conf.tpl
systemctl start chrony.service
timedatectl set-timezone Europe/London
systemctl stop chrony.service
chronyd -q
systemctl start chrony.service
```

If the session still expires, remember to clean cookies in your browser

3 - XNAT - SMTP

I created a dedicated email address:
ncita.xnat.ucam@gmail.com

Email worked
with Gmail and
this settings
the first time!
Hooray!



Mail Server Settings

Enable SMTP? ☒ Enabled

SERVER

Host

Port

Protocol

AUTHENTICATION

SMTP Auth? ☒ Enabled

Username

Password

OTHER SETTINGS

Start TLS? ☒ Enabled

SSL Trust

Email Prefix

ncita.xnat.ucam@gmail.com Inbox - n...m@gmail.com 17:44 N

[XNAT] XNAT New User Request: Lorena Escudero

To: ncita.xnat.ucam@gmail.com

New User Request

Date: Wed Jan 22 17:44:22 UTC 2020

Site: XNAT

Host: <https://ncita.xnat.radiology.medschl.cam.ac.uk/>

Username: loressa

First: Lorena

Last: Escudero

Phone:

Lab:

Email: les44@cam.ac.uk

This account has been created but will be disabled until you enable the account. You must log in before enabling the account.

[Review and Enable](#)

User Comments: Testing registration
Wed Jan 22 17:44:22 UTC 2020, loressa, Lorena, Escudero, , , les44@cam.ac.uk

I added some
“disclaimer text” to
the registration email
(updated now to
include also text in
site description)

ncita.xnat.ucam@gmail.com Inbox - Hermes 17:46 N Details

Welcome to XNAT

To: les44@cam.ac.uk, Cc: ncita.xnat.ucam@gmail.com

Welcome to the XNAT Web Archive!

This is the NCITA XNAT repository for radiological images of the University of Cambridge. By using this repository, you agree to upload only completely anonymised images, for projects whose relevant ethics have been approved. Please also note that whilst this repository gives you access to a system for storage and sharing, you are responsible of the original images.

You can now log on to the XNAT at: <https://ncita.xnat.radiology.medschl.cam.ac.uk/>

Your username is: loressa

For support, contact the [XNAT Management](#)

4 - TLS/SSL

- 1) Got a human-friendly domain name registered as `ncita.xnat.radiology.medschl.cam.ac.uk`
- 2) TLS/SSL certificate with Let's Encrypt (zero-cost certificate)

<https://letsencrypt.org>

<https://certbot.eff.org/lets-encrypt/ubuntuionic-nginx.html>

```
~$ sudo apt-get update
~$ sudo apt-get install software-properties-common
~$ sudo add-apt-repository universe
~$ sudo add-apt-repository ppa:certbot/certbot
~$ sudo apt-get update
~$ sudo apt-get install certbot python-certbot-nginx
~$ sudo emacs -nw /etc/nginx/sites-available/xnat
    Add:
        > server_name ncita.xnat.radiology.medschl.cam.ac.uk;
           inside the server{} block
~$ sudo certbot --nginx
```

IMPORTANT NOTES:

- Congratulations! Your certificate and chain have been saved at:
/etc/letsencrypt/live/ncita.xnat.radiology.medschl.cam.ac.uk/fullchain.pem
Your key file has been saved at:
/etc/letsencrypt/live/ncita.xnat.radiology.medschl.cam.ac.uk/privkey.pem
Your cert will expire on 2020-05-06. To obtain a new or tweaked version of this certificate in the future, simply run certbot again with the "certonly" option. To non-interactively renew **all** of your certificates, run "certbot renew"

5 - Storage

Cloud storage offers two options:

- Block Storage (Cinder)
- Object Storage (Swift)

Block Storage provides a traditional block storage device -like a hard drive- over the network.

/dev/vdc is the new disk -> Now we can create a filesystem and mount it

Create Volume ✕

Volume Name

xnat-storage

Description

Volume Source

No source, empty volume

Type

RDS-AZ-WCDC-Ceph01-Standard

Size (GiB) *

2000

Availability Zone

nova

Description:

Volumes are block devices that can be attached to instances.

Volume Type Description:

RDS-AZ-WCDC-Ceph01-Standard
West Cambridge Data Centre - Ceph cluster Ceph01

Volume Limits

Total Gibibytes (0 GiB)

2,000 GiB Available

Number of Volumes (0)

10 Available

Cancel

Create Volume

```
root@webserver:/opt/tomcat7# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
vda          252:0    0   60G  0 disk
├─vda1       252:1    0  59.9G  0 part /
├─vda14      252:14   0    4M   0 part
└─vda15      252:15   0   106M  0 part /boot/efi
vdb          252:16   0    2G   0 disk [SWAP]
vdc          252:32   0    2T   0 disk
└─vdc1       252:33   0    2T   0 part
```

```
sudo mount /dev/vdc1 /storage
```

| Filesystem | Size | Used | Avail | Use% | Mounted on |
|------------|------|------|-------|------|------------|
| /dev/vdc1 | 2.0T | 2.1G | 2.0T | 1% | /storage |

Then make a symbolic link between /data/xnat and /var/storage/xnat

Volumes

Volumes

Volume Snapshots

Filter

Q

+ Create Volume (Quota exceeded)

⇌ Accept Transfer

🗑 Delete Volumes

| <input type="checkbox"/> | Name | Description | Size | Status | Type | Attached To | Availability Zone | Bootable | Encrypted | Actions |
|--------------------------|--------------|-------------|---------|--------|-----------------------------|---|-------------------|----------|-----------|------------------------------------|
| <input type="checkbox"/> | xnat-storage | - | 2000GiB | In-use | RDS-AZ-WCDC-Ceph01-Standard | Attached to webserver on /dev/vdc | nova | No | No | <div>Edit Volume</div> <div></div> |

Displaying 1 item