



National Cybersecurity R&D Laboratory

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OpenStack [Beta] Linux VM User Manual

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Version Control

Version	Date	Amended by	Summary of Changes
0.1	05 Dec 2020	Aris Cahyadi Risdianto	Init the doc draft.
0.2	02 April 2022	Liu Yuancheng	Small improvement

1. Introduction

Doc Description:

This manual will be used by National Cybersecurity R&D Lab (NCL) services users as a reference for creating a Linux VM in their project under NCL OpenStack [Beta] Testbed and use the SSH to remotely access the Linux VM in their instance from local computer. The document contains two main sections, the **Linux [Ubuntu] VM Creation** section will introduce the detailed steps to create the VM under an instance. The **VM Remote Access** part will introduce how to config remote access to VM from user's local computer.

Doc Type:

External User [Customer] Manual, All NCL external users.

Doc Remark:

- **Customer:** The key contact person and the one who make payment to NCL.
- **User:** The person who will use our NCL service such as access the instance.

2. Linux VM Creation

Follow the steps 2.1 to 2.3 below to create a Linux VM in an instance under user's project.

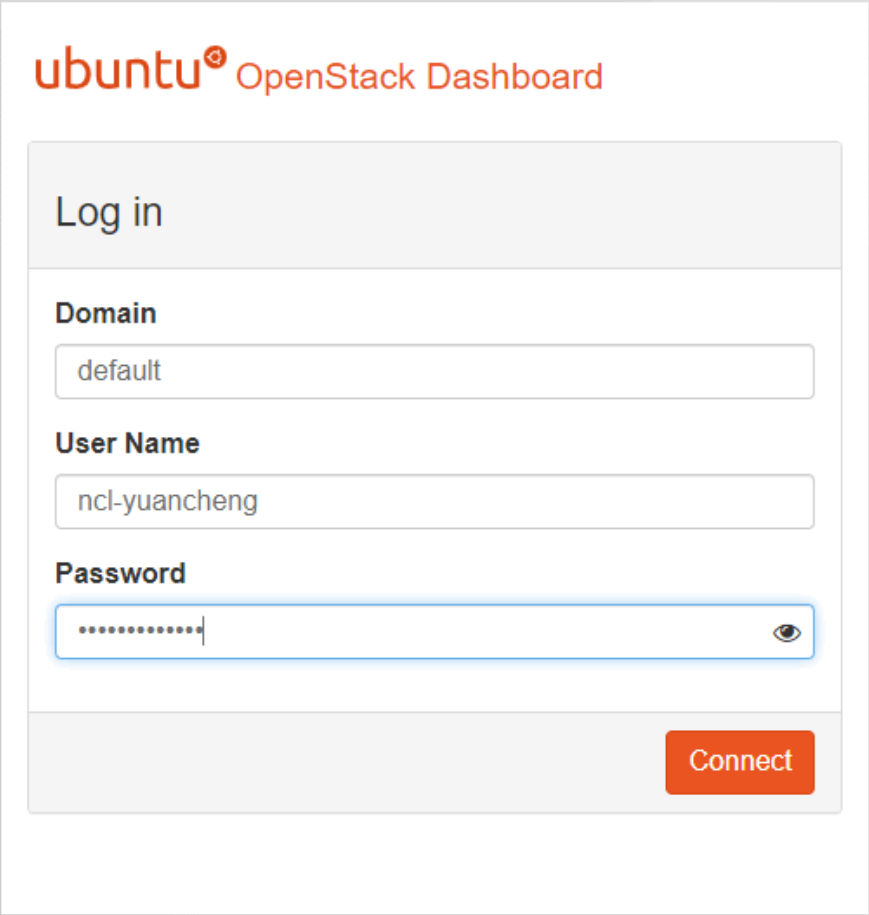
2.1 Login the NCL OpenStack Platform

OpenStack [Beta] platform link: <https://openstack.ncl.sg/>

Login with the NCL OpenStack [Beta] web account and password under domain **default**. (As shown below, the account username ncl-xxxx)

Domain: default

Username/password: <customer ncl username>/< customer password >



The screenshot shows the 'ubuntu OpenStack Dashboard' login interface. It features a 'Log in' section with three input fields: 'Domain' (containing 'default'), 'User Name' (containing 'ncl-yuancheng'), and 'Password' (containing masked characters). A 'Connect' button is located at the bottom right of the form.

NOTE: If there is any login problem or you don't have a NCL OpenStack [Beta] web account, please contact NCL Support Team (support@ncl.sg).

2.2 Create an Instance with Linux-VM-Image

Follow below steps 2.2.1 to 2.2.3 to create an instance with a NCL public Linux-VM image. In this section, we use Ubuntu 18.05_x64 as an example.

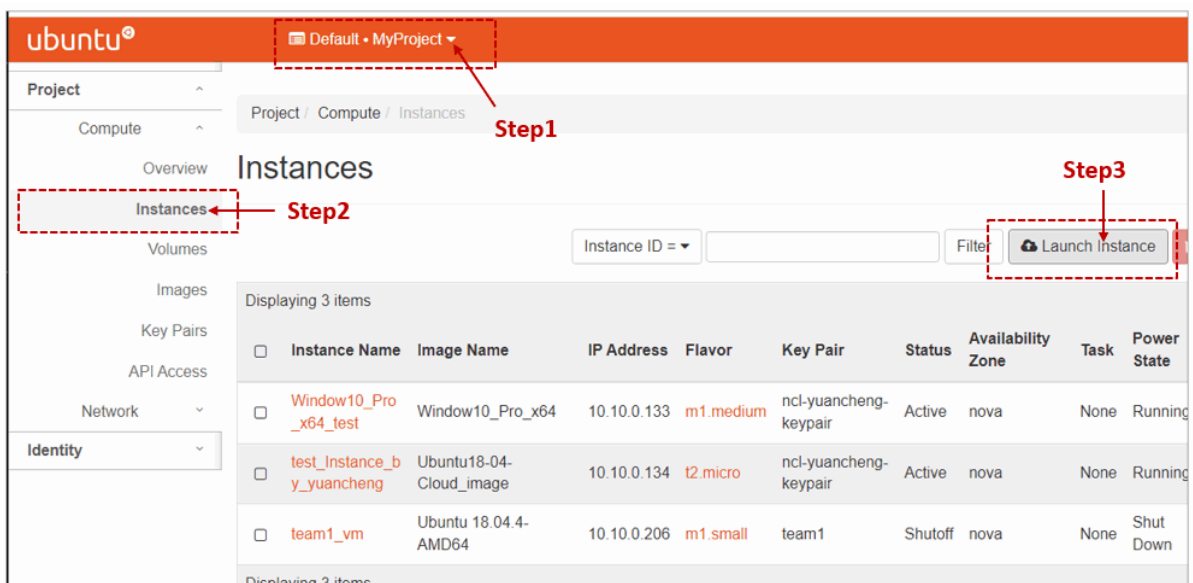
2.2.1 Access the Instance Creation Page

After user login OpenStack [Beta] platform web (as shown below), please select your project and access the instance creation page and follow the below steps:

Step_1: Select your project in the top project selection drop-down menu. If you don't have a project yet, please create a new project or contact NCL-support (support@ncl.sg).

Step_2: In the left side navigation panel, select **Project** => **Compute** => **Instances** tab to get to instance management page.

Step_3: In the instance management page select **launch Instance** button.



2.2.2 Create an Instance with Ubuntu-VM Image

After the instance configuration dialog pop-up, config the instance with below steps:

Step_1: Add a unique instance name (instance ID) in the “Details” config page (as shown below). Other setting use default value:

- Availability Zone: **nova**.
- Instance Count: **1**;

Default • MyProject ▾

Launch Instance

Details *

Please provide the initial hostname for the instance, the availability zone, and the instance count. Increase the Count to create multiple instances with the same settings. **Step1**

Instance Name *

Availability Zone

nova

Count *

1

Source *

Flavor *

Networks *

Network Ports

Security Groups

Key Pair

Configuration

Step_2: Click “Next” then switch to `source` page to select the Image, in the public VM-image (*qcow2) available list select the Ubuntu VM image you want to use (example: Ubuntu 18.04_Cloud_image) and press the 'up' arrow button to add the image to the allocated list.

Use default setting. Select Boot Source: `image`; Create New Volume: `No`.

Launch Instance

Details *

Source *

Flavor *

Networks *

Network Ports

Security Groups

Key Pair

Configuration

Server Groups

Scheduler Hints

Metadata

Instance source is the template used to create an instance. You can use an image, a snapshot of an instance (image snapshot), a volume or a volume snapshot (if enabled). You can also choose to use persistent storage by creating a new volume.

Select Boot Source

Image

Create New Volume

Yes No

Allocated

Name	Updated	Size	Type	Visibility
Select an item from Available items below				

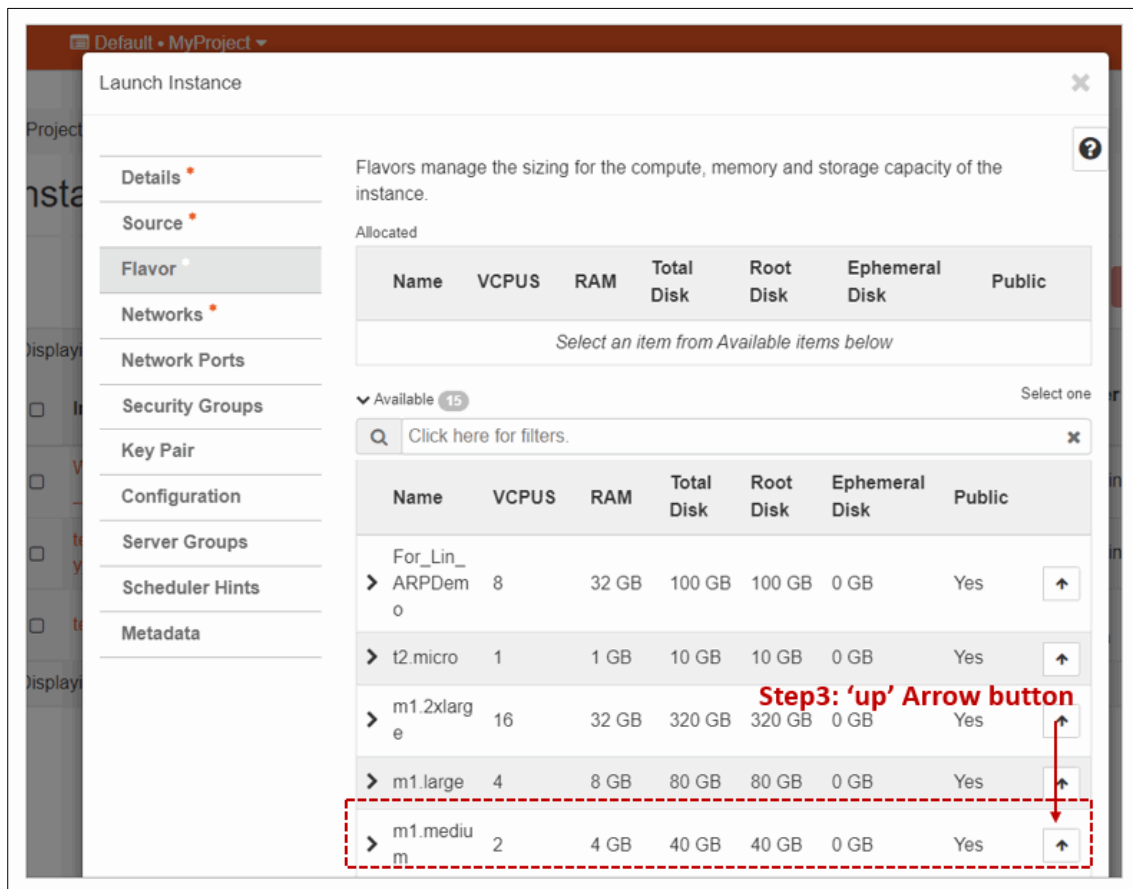
Available 31

Search: Ubuntu18

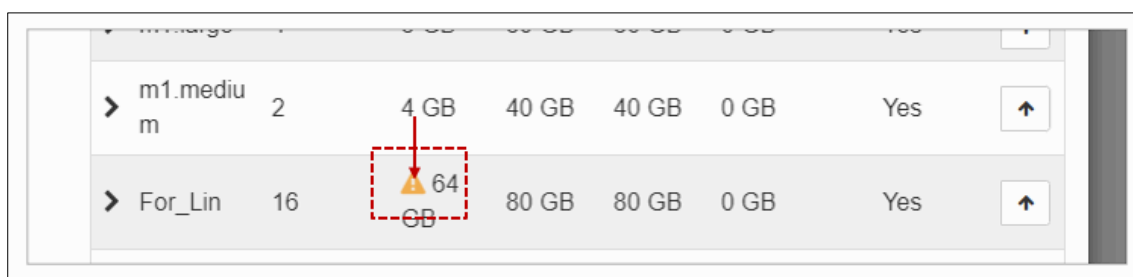
Name	Updated	Size	Type	Visibility
> Ubuntu18-04-Cloud_image	6/8/20 3:46 PM	329.75 MB	qcow2	Public

Note: Public image can be used in any instance, but private image can only be used in your own project instance.

Step_3: Switch to “Flavor” page to select the image instance hardware config. Press the 'up' arrow button to add the flavor as shown below:

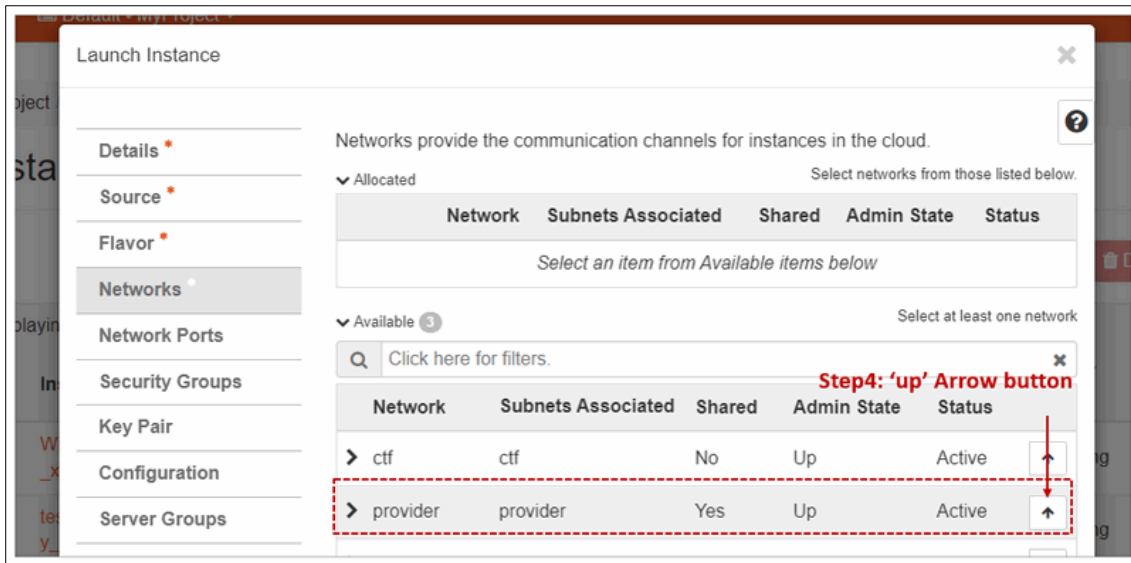


Note: If the flavor shows "alert" icon of the flavor (as shown below), that means your instance doesn't have enough capacity for allocating the hardware flavor. Choose a flavor which does not contain any “alert” icons. Otherwise, please contact NCL support team (support@ncl.sg) to extend the instance capacity if you wish.

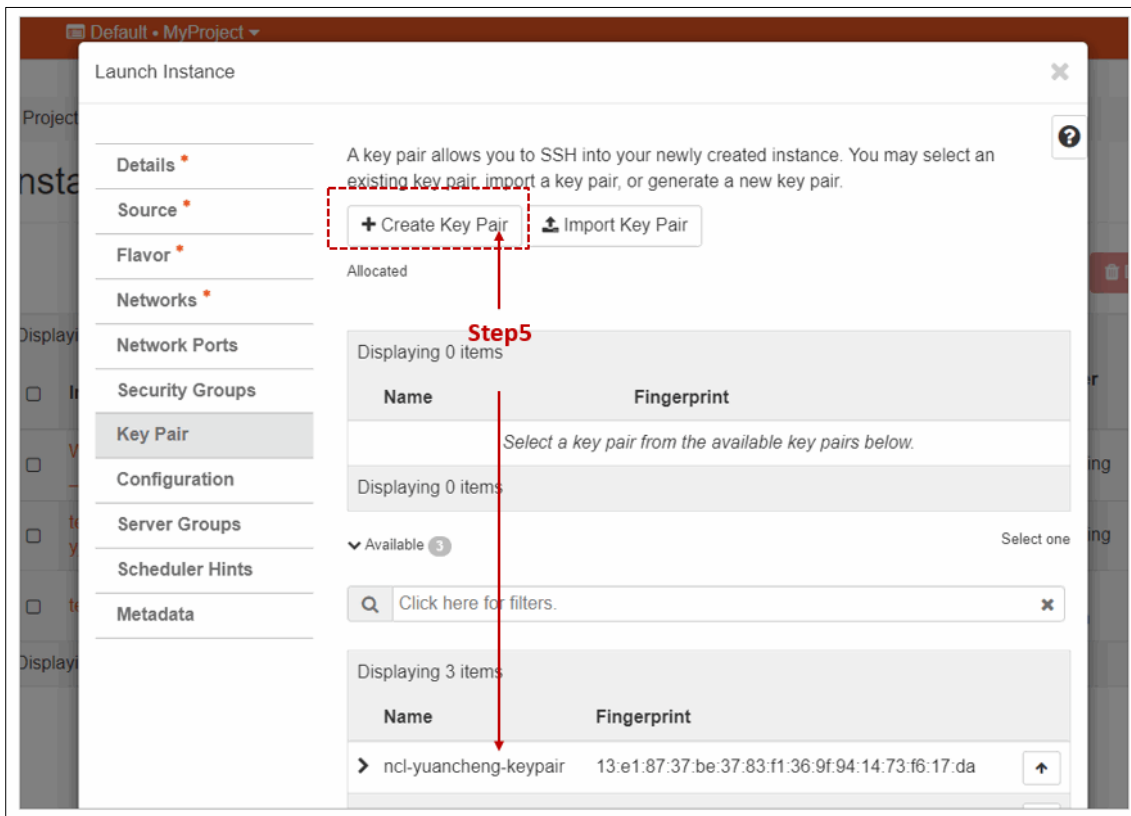


Step_4: Switch to “Networks” config page and select provider config. Press the 'up' arrow button to add the provider network (as shown below).

Note: If you want to login to your instance using SSH, you must add the instance to the provider network or assign a floating IP address (e.g., 10.10.0.111) to the instance. In addition, make sure that the 'default' security group allows ICMP (ping) and secure shell (SSH with TCP port 22).

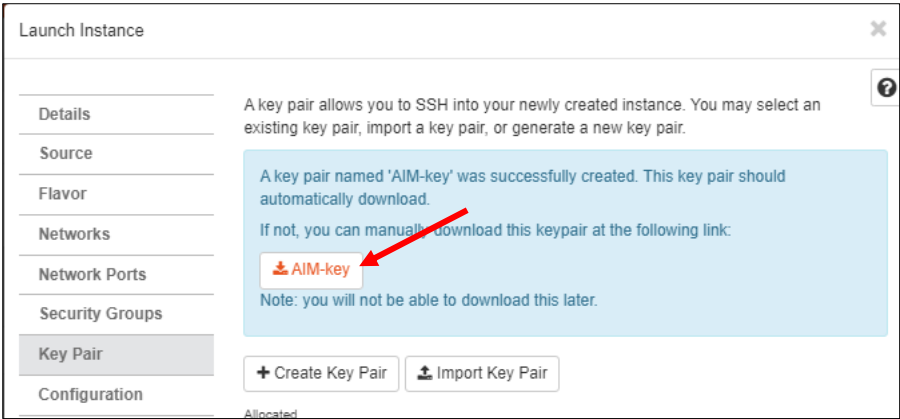


Step_5: Switch to “Key Pair” page to create the keypair. Press the `+ Create Key Pair` button. Type in the keypair name and download the keypair `*.pem` file. Please keep your key pair file and don't share with other people.

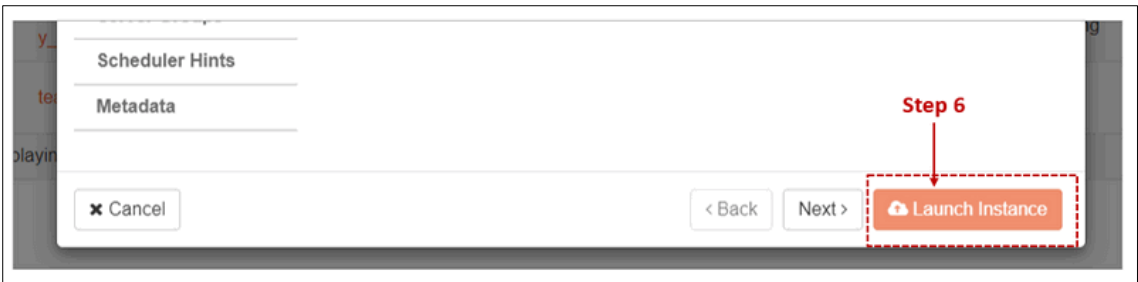


After selected “+ Create Key Pair”, when the new key pair creation is finished the keypair file download button will show up (as shown below). Press the marked download button.

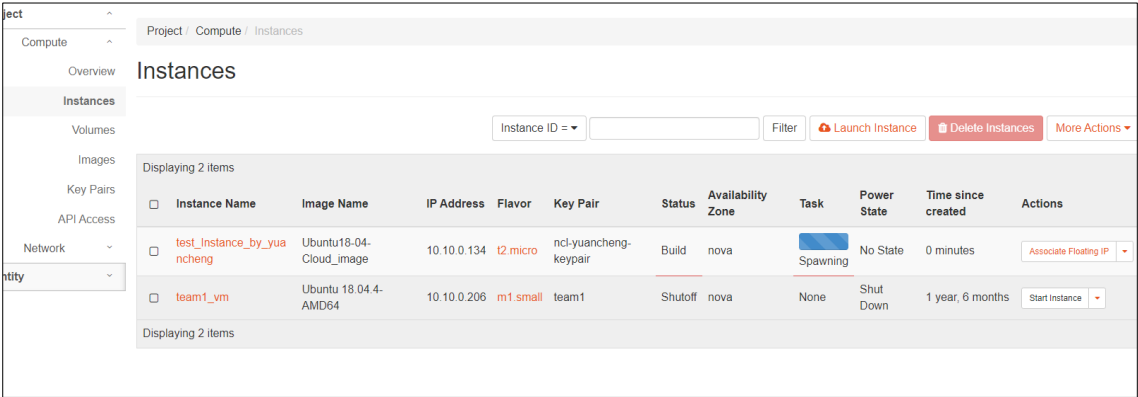
Note: If you have your own `*.pem` file, you can select the `import key pair` to upload and use it. You may also use the key pair you created before which stored in the system. The key pair you created will be shown in the available list.



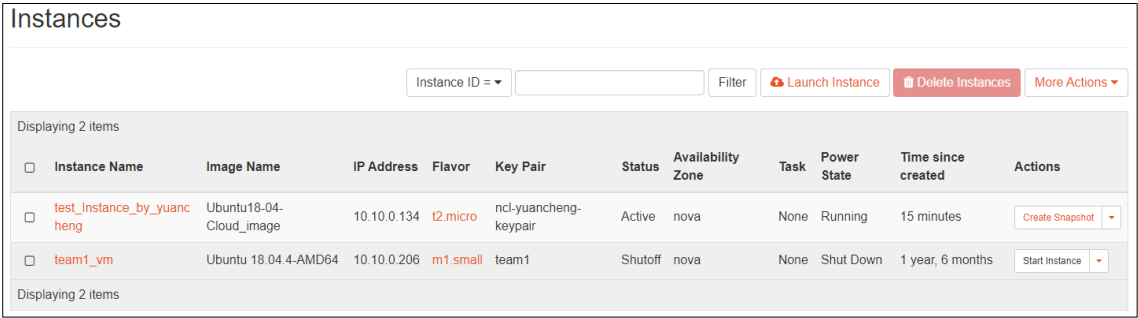
Step_6: Finish all the other setting pages with the default config value and press the “Launch Instance” button to launch the VM. (As shown below)



After the instance has been launched, you can see the instance is under spawning:



When the “Power State” shows Running, the instance is ready for using:



3. Remote Access the Linux VM

Follow below steps to remote access the Ubuntu VM from user's local computer using SSH tools. Get the instance internal IP address from the instance list (as shown below the IP address is **10.10.0.134**):

Instances

Instance ID =

Filter

Launch Instance

Delete Instances

More Actions

Displaying 2 items

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Flavor	Key Pair	Status	Availability Zone	Task	Power State	Time since created	Actions
<input type="checkbox"/>	test_instance_by_yuancheng	Ubuntu18-04-Cloud_image	10.10.0.134	t2.micro	ncl-yuancheng-keypair	Active	nova	None	Running	15 minutes	Create Snapshot
<input type="checkbox"/>	team1_vm	Ubuntu 18.04.4-AMD64	10.10.0.206	m1.small	team1	Shutoff	nova	None	Shut Down	1 year, 6 months	Start Instance

Displaying 2 items

Open a cmd terminal and follow below steps to run the commands line:

Step_1: login the NCL gateway (SSH to gateway.ncl.sg) with your gateway account with below cmd:

```
ssh <your_user_name>@gateway.ncl.sg
```

Step_2: Create key file under user's folder with below cmd:

```
ssh sudo mkdir .ssh
touch .ssh/key-pair.pem
```

Step_3: Copy your key data (use vi editor) in the key-pair.pem you created:

```
vi .ssh/key-pair.pem

# Open the key-pair file you saved in your local computer and copy the contents to key-pair.pem.

sudo chmod 0600 key-pair.pem
```

Step_4: Login to your instances using SSH from gateway

After copied the common instance key-pair.pem file to your home directory /home/user/.ssh folder on gateway.ncl.sg. Then in terminal, type in below command to access the VM.

```
ssh <user_name>@<10.10.0.x> -i .ssh/key-pair.pem

example: ssh ubuntu@10.10.0.134 -i .ssh/key-pair.pem
```

Note: 10.10.0.x with the provider / floating IP address of your instance. In this example, the VM IP is 10.10.0.134 (as shown in the section 3 beginning part). For Ubuntu systems, the default user is **ubuntu**. For other operating systems, please refer to this page:

<https://docs.openstack.org/image-guide/obtain-images.html>.

Step_5: Change password of the default user 'ubuntu' with below cmd:

```
sudo passwd ubuntu
```

Remark:

Example to copy the key contents to your gateway `/home/user/.ssh/keypair.pem`.

[illegible]

A remote access example is shown below:

The screenshot displays the ncl.sg terminal application interface. On the left, a sidebar contains icons for Sessions, Tools, and Macros. Below these is a file explorer showing the directory structure of the terminal session, including files like .cache, .ssh, .bash_history, .bash_logout, .bashrc, .profile, .viminfo, .Xauthority, key-pair.pem, and nd-yuancheng-keypair.pem. The main area is a terminal window titled '2. gateway ncl.sg (ncl-yuancheng)'. It shows the command 'ssh ubuntu@10.10.0.134 -i .ssh/key-pair.pem' being executed, resulting in a login prompt for 'ubuntu' on '18.04.4 LTS (GNU/Linux 4.15.0-101-generic x86_64)'. The terminal output includes system information, package update status, and a list of programs included with the Ubuntu system. The bottom of the terminal window shows the command 'ls' being executed, resulting in the output 'ls'.

gateway.ncl.sg (ncl-yuancheng)

Terminal Sessions View X server Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Quick connect...

2. gateway ncl.sg (ncl-yuancheng)

~/home/ncl-yuancheng/

Name	Size (KB)	Last modified
.cache		2022-03-29 ...
.ssh		2022-03-29 ...
.bash_history	1	2022-03-29 ...
.bash_logout	1	2015-09-01 ...
.bashrc	3	2015-09-01 ...
.profile	1	2017-05-16 ...
.viminfo	1	2022-03-29 ...
.Xauthority	1	2022-03-29 ...
key-pair.pem	1	2022-03-29 ...
nd-yuancheng-keypair.pem	1	2022-03-29 ...

```
ncl-yuancheng@gateway:~$ ssh ubuntu@10.10.0.134 -i .ssh/key-pair.pem
Welcome to Ubuntu 18.04.4 LTS (GNU/Linux 4.15.0-101-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Tue Mar 29 13:51:15 UTC 2022

System load:  0.0               Processes:    80
Usage of /:   10.2% of 9.52GB    Users logged in: 0
Memory usage: 12%              IP address for ens3: 10.10.0.134
Swap usage:   0%

0 packages can be updated.
0 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@test-instance-by-yuancheng:~$ ls
ubuntu@test-instance-by-yuancheng:~$
```

Remote monitoring

Follow terminal folder

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