# Method of Procedure (MOP) for Installing a VM in OpenStack and Configuring Firewall

## Document Control

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## Purpose

This MOP outlines the steps to create a Virtual Machine (VM) in OpenStack, assign an IP address, install a firewall, and configure it to allow only specific IPs in a designated subnet. Additionally, it includes instructions on how to set CPU and RAM resources according to user requirements.

## Prerequisites

- Access to an OpenStack environment with appropriate permissions to create VMs.

- OpenStack CLI or Horizon dashboard access.

- Basic knowledge of networking and firewall configurations.

## References

- OpenStack Documentation: https://docs.openstack.org/

- Firewall Configuration Guide: https://www.iptables.info/

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## Procedure

### Step 1: Create a VM in OpenStack

1. \*\*Log in to OpenStack:\*\*

- Use the OpenStack CLI or Horizon dashboard to log in.

2. \*\*Create a VM:\*\*

- \*\*Using OpenStack CLI:\*\*

```bash

openstack server create --flavor <FLAVOR\_NAME> --image <IMAGE\_NAME> --network <NETWORK\_NAME> --key-name <KEY\_NAME> <VM\_NAME>

```

Replace `<FLAVOR\_NAME>`, `<IMAGE\_NAME>`, `<NETWORK\_NAME>`, `<KEY\_NAME>`, and `<VM\_NAME>` with your specific values.

- \*\*Using Horizon Dashboard:\*\*

- Navigate to "Project" > "Compute" > "Instances".

- Click on "Launch Instance".

- Fill in the required fields (Name, Flavor, Image, Network, Key Pair).

- Click "Launch Instance".

### Step 2: Assign an IP Address

1. \*\*Assign Floating IP (if required):\*\*

- \*\*Using OpenStack CLI:\*\*

```bash

openstack floating ip create <EXTERNAL\_NETWORK>

openstack server add floating ip <VM\_NAME> <FLOATING\_IP>

```

- \*\*Using Horizon Dashboard:\*\*

- Navigate to "Project" > "Compute" > "Instances".

- Select the instance and click on "Associate Floating IP".

- Choose an available floating IP and associate it.

### Step 3: Install and Configure Firewall

1. \*\*Access the VM:\*\*

- SSH into the VM using the assigned IP address.

```bash

ssh <USER>@<FLOATING\_IP>

```

2. \*\*Install Firewall (UFW):\*\*

```bash

sudo apt update

sudo apt install ufw

```

3. \*\*Configure Firewall:\*\*

- Allow only specific IPs in a designated subnet (e.g., `192.168.1.0/24`):

```bash

sudo ufw allow from 192.168.1.0/24

sudo ufw deny from any

```

4. \*\*Enable Firewall:\*\*

```bash

sudo ufw enable

```

5. \*\*Check Firewall Status:\*\*

```bash

sudo ufw status

```

### Step 4: Set CPU and RAM Resources

1. \*\*Modify VM Flavor (if needed):\*\*

- \*\*Using OpenStack CLI:\*\*

```bash

openstack flavor create --ram <RAM\_MB> --disk <DISK\_GB> --vcpus <CPU\_COUNT> <FLAVOR\_NAME>

```

- \*\*Using Horizon Dashboard:\*\*

- Navigate to "Admin" > "System" > "Flavors".

- Click on "Create Flavor" and fill in the details.

2. \*\*Resize the VM (if changing flavor):\*\*

- \*\*Using OpenStack CLI:\*\*

```bash

openstack server resize --flavor <NEW\_FLAVOR\_NAME> <VM\_NAME>

```

- \*\*Using Horizon Dashboard:\*\*

- Navigate to "Project" > "Compute" > "Instances".

- Select the instance and click on "Resize Instance".

### Step 5: Verify Configuration

1. \*\*Check VM Status:\*\*

```bash

openstack server list

```

2. \*\*Test Connectivity:\*\*

- From a machine within the allowed subnet, ping the VM's IP address to ensure it is reachable.

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## Conclusion

This MOP provides a comprehensive guide to creating a VM in OpenStack, assigning an IP address, configuring a firewall, and setting CPU and RAM resources. Ensure to follow each step carefully and verify configurations to maintain a secure and efficient environment.

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## Appendices

- \*\*Appendix A:\*\* Common OpenStack CLI Commands

- \*\*Appendix B:\*\* UFW Command Reference

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