# 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 ports. Additionally, it includes instructions on how to set CPU and RAM according to user requirements.

## Scope

This procedure is applicable to OpenStack environments and assumes that the user has the necessary permissions to create VMs and manage security groups.

## Prerequisites

1. Access to an OpenStack environment with appropriate credentials.

2. OpenStack CLI or Horizon dashboard access.

3. Basic knowledge of networking and firewall configurations.

## Procedure

### Step 1: Create a VM in OpenStack

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

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

2. \*\*Select the appropriate project:\*\*

- Ensure you are in the correct project where you want to create the VM.

3. \*\*Create the VM:\*\*

- Using the OpenStack CLI, run the following command to create a VM:

```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.

4. \*\*Set CPU and RAM:\*\*

- To customize CPU and RAM, you can create a new flavor or use an existing one. To create a new flavor, use:

```bash

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

```

- Replace `<RAM\_SIZE\_MB>`, `<DISK\_SIZE\_GB>`, `<CPU\_COUNT>`, and `<FLAVOR\_NAME>` with your desired specifications.

### Step 2: Assign an IP Address

1. \*\*Allocate a Floating IP (if needed):\*\*

- If you need external access, allocate a floating IP:

```bash

openstack floating ip create <EXTERNAL\_NETWORK>

```

- Replace `<EXTERNAL\_NETWORK>` with the name of your external network.

2. \*\*Associate the Floating IP with the VM:\*\*

- Use the following command to associate the floating IP:

```bash

openstack floating ip set --port <PORT\_ID> <FLOATING\_IP>

```

- Replace `<PORT\_ID>` with the port ID of your VM and `<FLOATING\_IP>` with the allocated floating IP.

### Step 3: Install and Configure Firewall

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

- SSH into the VM using the floating IP:

```bash

ssh -i <KEY\_PATH> <USER>@<FLOATING\_IP>

```

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

- Update the package list and install UFW:

```bash

sudo apt update

sudo apt install ufw

```

3. \*\*Configure UFW:\*\*

- Allow specific ports (e.g., SSH, HTTP, HTTPS):

```bash

sudo ufw allow 22/tcp # SSH

sudo ufw allow 80/tcp # HTTP

sudo ufw allow 443/tcp # HTTPS

```

- Deny all other incoming connections:

```bash

sudo ufw default deny incoming

```

4. \*\*Enable UFW:\*\*

- Enable the firewall:

```bash

sudo ufw enable

```

5. \*\*Check UFW Status:\*\*

- Verify the firewall rules:

```bash

sudo ufw status

```

### Step 4: Verification

1. \*\*Test Connectivity:\*\*

- From an external machine, test connectivity to the VM using allowed ports (e.g., SSH, HTTP).

2. \*\*Check Firewall Rules:\*\*

- Ensure that only the specified ports are open and all others are blocked.

## Troubleshooting

- If you encounter issues with VM creation, check the OpenStack logs for errors.

- Ensure that the selected flavor has enough resources (CPU, RAM) for your application.

- If the firewall is blocking necessary traffic, review the UFW rules and adjust as needed.

## Conclusion

This MOP provides a comprehensive guide to creating a VM in OpenStack, assigning an IP address, and configuring a firewall to secure the VM. Follow these steps to ensure a successful deployment and secure configuration.

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