# Method of Procedure (MOP) for Deploying an OpenStack VM

## Objective

This MOP outlines the steps to deploy a virtual machine (VM) on a specific OpenStack node, assign a static IP address, install a firewall, configure it to block all traffic except for a specific subnet, and set the CPU and RAM according to user specifications.

## Prerequisites

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

- OpenStack CLI or Horizon dashboard access.

- Knowledge of the specific node where the VM will be deployed.

- The desired static IP address and subnet information.

## Procedure

### Step 1: Prepare the Environment

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

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

### Step 2: Create a VM

1. \*\*Identify the Node\*\*:

- Determine the specific compute node where you want to deploy the VM.

2. \*\*Define VM Specifications\*\*:

- Decide on the following specifications:

- Flavor (CPU and RAM)

- Image (OS to be installed)

- Network (the network to which the VM will connect)

- Security group (for firewall rules)

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

- Using the OpenStack CLI, run the following command:

```bash

openstack server create --flavor <FLAVOR\_NAME> --image <IMAGE\_NAME> --nic net-id=<NETWORK\_ID> --security-group <SECURITY\_GROUP\_NAME> --key-name <KEY\_NAME> <VM\_NAME>

```

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

### Step 3: Assign a Static 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>

```

- Note the allocated floating IP.

2. \*\*Assign the Floating IP to the VM\*\*:

- Run the following command:

```bash

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

```

3. \*\*Assign a Static IP\*\*:

- If you want to assign a static internal IP, you can specify it during the VM creation:

```bash

openstack server create --flavor <FLAVOR\_NAME> --image <IMAGE\_NAME> --nic net-id=<NETWORK\_ID>,v4-fixed-ip=<STATIC\_IP> --security-group <SECURITY\_GROUP\_NAME> --key-name <KEY\_NAME> <VM\_NAME>

```

### Step 4: Install and Configure Firewall

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

- SSH into the VM using the floating IP or the assigned static IP:

```bash

ssh <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\*\*:

- Set the default policy to deny all incoming traffic:

```bash

sudo ufw default deny incoming

```

- Allow traffic from the specific subnet (replace `<SUBNET>` with your subnet):

```bash

sudo ufw allow from <SUBNET>

```

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

- Enable the firewall:

```bash

sudo ufw enable

```

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

- Verify the firewall rules:

```bash

sudo ufw status

```

### Step 5: Verify VM Configuration

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

- Ensure the VM is running:

```bash

openstack server list

```

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

- From another machine in the allowed subnet, test connectivity to the VM:

```bash

ping <STATIC\_IP>

```

### Step 6: Document the Configuration

- Record the VM details, including:

- VM Name

- Static IP Address

- Floating IP Address (if applicable)

- Firewall rules

## Conclusion

This MOP provides a comprehensive guide to deploying an OpenStack VM, assigning a static IP, configuring a firewall, and ensuring the VM meets user specifications for CPU and RAM. Always ensure to follow best practices for security and resource management in your OpenStack environment.