# Method of Procedure (MOP) for Deploying a VM on OpenStack with HAProxy Installation

## Document Control

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## Purpose

This MOP outlines the detailed steps to deploy a Virtual Machine (VM) on OpenStack with specific memory and CPU configurations, set a designated node name, assign a specific IP address, and install and configure HAProxy to allow only specific ports.

## Scope

This procedure is applicable to OpenStack environments and assumes that the user has the necessary permissions to create VMs and install software.

## Prerequisites

1. Access to an OpenStack environment with appropriate credentials.

2. OpenStack CLI or Horizon dashboard access.

3. Basic knowledge of Linux command line.

4. The user must have administrative privileges to install packages and configure firewall settings.

## Resources Required

- OpenStack environment

- Ubuntu 22.04 image

- Network configuration details (specific IP address, ports to allow)

## Procedure

### Step 1: Prepare OpenStack Environment

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

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

2. \*\*Identify the Image:\*\*

- Ensure that the Ubuntu 22.04 image is available in your OpenStack project. You can list available images using:

```bash

openstack image list

```

3. \*\*Identify the Flavor:\*\*

- Choose a flavor that meets the memory and CPU requirements. List available flavors using:

```bash

openstack flavor list

```

### Step 2: Create the VM

1. \*\*Create the VM:\*\*

- Use the following command to create a VM with the specified node name, flavor, and image. Replace `<NODE\_NAME>`, `<FLAVOR>`, `<IMAGE>`, and `<NETWORK>` with your specific values.

```bash

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

```

2. \*\*Assign a Specific IP Address:\*\*

- If you need to assign a specific floating IP address, first allocate a floating IP:

```bash

openstack floating ip create <EXTERNAL\_NETWORK>

```

- Then associate the floating IP with your VM:

```bash

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

```

### Step 3: Access the VM

1. \*\*SSH into the VM:\*\*

- Use SSH to access the VM using the floating IP address:

```bash

ssh ubuntu@<FLOATING\_IP>

```

### Step 4: Install HAProxy

1. \*\*Update Package List:\*\*

- Update the package list to ensure you have the latest information:

```bash

sudo apt update

```

2. \*\*Install HAProxy:\*\*

- Install HAProxy using the following command:

```bash

sudo apt install haproxy -y

```

### Step 5: Configure HAProxy

1. \*\*Edit HAProxy Configuration:\*\*

- Open the HAProxy configuration file:

```bash

sudo vi /etc/haproxy/haproxy.cfg

```

2. \*\*Allow Specific Ports:\*\*

- In the configuration file, specify the frontend and backend settings. For example, to allow only HTTP (port 80) and HTTPS (port 443):

```plaintext

frontend http\_front

bind \*:80

bind \*:443

default\_backend http\_back

backend http\_back

server server1 127.0.0.1:8080 check

```

3. \*\*Save and Exit:\*\*

- Save the changes and exit the editor.

### Step 6: Restart HAProxy

1. \*\*Restart HAProxy Service:\*\*

- Restart the HAProxy service to apply the changes:

```bash

sudo systemctl restart haproxy

```

### Step 7: Configure Firewall (Optional)

1. \*\*Allow Specific Ports Through Firewall:\*\*

- If you are using UFW (Uncomplicated Firewall), allow the specific ports:

```bash

sudo ufw allow 80/tcp

sudo ufw allow 443/tcp

```

2. \*\*Enable UFW:\*\*

- If UFW is not enabled, enable it:

```bash

sudo ufw enable

```

### Step 8: Verify HAProxy Installation

1. \*\*Check HAProxy Status:\*\*

- Verify that HAProxy is running:

```bash

sudo systemctl status haproxy

```

2. \*\*Test HAProxy:\*\*

- You can test HAProxy by accessing the VM's floating IP in a web browser or using curl:

```bash

curl http://<FLOATING\_IP>

```

## Conclusion

This MOP provides a comprehensive guide to deploying a VM on OpenStack, installing HAProxy, and configuring it to allow specific ports. Ensure to monitor the HAProxy logs for any issues and adjust the configuration as necessary.

## References

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

- HAProxy Documentation: http://www.haproxy.org/

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