# 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 redirect traffic to a specified server.

## Prerequisites

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

- OpenStack CLI or Horizon dashboard access.

- Basic knowledge of Linux commands and HAProxy configuration.

## Resources Required

- OpenStack credentials (username, password, project name, and domain).

- Specific node name for the VM.

- Desired IP address for the VM.

- Server IP address to which HAProxy will redirect traffic.

## Procedure

### Step 1: Set Up OpenStack Environment

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

- Open a terminal and source your OpenStack credentials:

```bash

source /path/to/your/openrc.sh

```

### Step 2: Create a VM

1. \*\*Define VM Parameters:\*\*

- Specify the following parameters:

- \*\*Node Name:\*\* [Enter desired node name]

- \*\*Flavor:\*\* Choose a flavor that meets the memory and CPU requirements (e.g., `m1.small` for 2GB RAM and 1 vCPU).

- \*\*Image:\*\* Select an appropriate image (e.g., Ubuntu 22.04).

- \*\*Network:\*\* Specify the network to which the VM will be connected.

- \*\*IP Address:\*\* [Enter desired static IP address]

2. \*\*Create the VM:\*\*

- Use the OpenStack CLI to create the VM:

```bash

openstack server create --flavor <FLAVOR> --image <IMAGE> --nic net-id=<NETWORK\_ID>,v4-fixed-ip=<DESIRED\_IP> --key-name <KEY\_NAME> <NODE\_NAME>

```

- Replace `<FLAVOR>`, `<IMAGE>`, `<NETWORK\_ID>`, `<DESIRED\_IP>`, `<KEY\_NAME>`, and `<NODE\_NAME>` with your specific values.

3. \*\*Verify VM Creation:\*\*

- Check the status of the VM:

```bash

openstack server list

```

### Step 3: Access the VM

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

- Use SSH to connect to the VM:

```bash

ssh <USERNAME>@<DESIRED\_IP>

```

- Replace `<USERNAME>` with the appropriate user (e.g., `ubuntu`).

### Step 4: Install HAProxy

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

- Run the following command to update the package list:

```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. \*\*Add Frontend and Backend Configuration:\*\*

- Add the following configuration to redirect traffic:

```plaintext

frontend http\_front

bind \*:80

default\_backend http\_back

backend http\_back

server webserver <SERVER\_IP>:<SERVER\_PORT> maxconn 200

```

- Replace `<SERVER\_IP>` with the IP address of the server to which you want to redirect traffic and `<SERVER\_PORT>` with the appropriate port (e.g., `80`).

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

```

2. \*\*Enable HAProxy to Start on Boot:\*\*

- Ensure HAProxy starts on boot:

```bash

sudo systemctl enable haproxy

```

### Step 7: Verify HAProxy Configuration

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

- Verify that HAProxy is running:

```bash

sudo systemctl status haproxy

```

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

- Use a web browser or a tool like `curl` to test the HAProxy setup:

```bash

curl http://<DESIRED\_IP>

```

### Step 8: Cleanup

- Document the VM details and HAProxy configuration for future reference.

- Ensure that any sensitive information (like passwords) is stored securely.

## Conclusion

This MOP provides a comprehensive guide to deploying a VM on OpenStack, installing HAProxy, and configuring it to redirect traffic to a specified server. Follow these steps carefully to ensure a successful setup.