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

## Date: 2024-06-05

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## Reference: OpenStack Documentation

### Prerequisites

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

- OpenStack CLI installed and configured on your local machine or management node.

- A specific node in the OpenStack environment where the VM will be deployed.

- Knowledge of the desired static IP address, CPU, and RAM specifications.

### Objective

To deploy an OpenStack VM on a specific node, assign it a static IP, install HAProxy, and configure it to redirect traffic to a specific server.

### Steps

#### 1. Prepare the Environment

- Ensure you have the necessary credentials and access to the OpenStack environment.

- Identify the specific node where the VM will be deployed.

#### 2. Create the OpenStack VM

1. \*\*Define Variables\*\*

```bash

export VM\_NAME="haproxy-vm"

export IMAGE\_NAME="ubuntu-22.04" # Change as per your available images

export FLAVOR\_NAME="m1.small" # Change as per your desired flavor

export NETWORK\_NAME="private-net" # Change as per your network

export STATIC\_IP="192.168.122.100" # Desired static IP

export KEY\_NAME="your-key" # Change to your SSH key name

export NODE\_NAME="compute-node-1" # Change to your specific node name

```

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

```bash

openstack server create --flavor $FLAVOR\_NAME --image $IMAGE\_NAME --key-name $KEY\_NAME --nic net-id=$(openstack network show $NETWORK\_NAME -f value -c id) --property "os-extended:availability\_zone=$NODE\_NAME" --security-group default $VM\_NAME

```

3. \*\*Assign Static IP\*\*

- First, create a port with the desired static IP:

```bash

openstack port create --network $NETWORK\_NAME --fixed-ip subnet\_id=$(openstack subnet show -f value -c id $(openstack subnet list -f value -c id | head -n 1)),ip-address=$STATIC\_IP haproxy-port

```

- Then, associate the port with the VM:

```bash

openstack server add port $VM\_NAME haproxy-port

```

#### 3. Install HAProxy on the VM

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

```bash

ssh -i /path/to/your/private/key ubuntu@$STATIC\_IP

```

2. \*\*Update the Package List\*\*

```bash

sudo apt update

```

3. \*\*Install HAProxy\*\*

```bash

sudo apt install -y haproxy

```

4. \*\*Configure HAProxy\*\*

- Open the HAProxy configuration file:

```bash

sudo vi /etc/haproxy/haproxy.cfg

```

- Add the following configuration to redirect traffic to a specific server (replace `TARGET\_SERVER\_IP` and `TARGET\_SERVER\_PORT` with actual values):

```plaintext

frontend http\_front

bind \*:80

default\_backend http\_back

backend http\_back

server target\_server TARGET\_SERVER\_IP:TARGET\_SERVER\_PORT check

```

5. \*\*Restart HAProxy\*\*

```bash

sudo systemctl restart haproxy

```

#### 4. Set CPU and RAM Specifications

- If you need to adjust the CPU and RAM after the VM is created, you can use the following command:

```bash

openstack server set --flavor <new\_flavor> $VM\_NAME

```

- Ensure that the new flavor has the desired CPU and RAM specifications.

### Verification

- Check the status of the VM:

```bash

openstack server show $VM\_NAME

```

- Verify that HAProxy is running:

```bash

sudo systemctl status haproxy

```

- Test the HAProxy configuration by accessing the static IP in a web browser or using `curl`:

```bash

curl http://$STATIC\_IP

```

### Conclusion

This MOP outlines the steps to deploy an OpenStack VM, assign a static IP, install HAProxy, and configure it to redirect traffic. Ensure to replace placeholder values with actual configurations as per your environment.