# Compute HA Usage Guide

Usage guide for interaction with VM-HA Service on setup based on Pacemaker and Canonical (Ubuntu 14.04)

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# Assumptions

This guide makes the following assumptions:

1. Compute HA Guide - Script (Canonical) has been followed end to end
2. VM-HA service is running

# Service Source Code & Related Files

The VM-HA service source code reside in the following directory and has the following files:

1. Source Files:
    a. Location: /opt/vm-ha
    b. Contents:
        i. daemonize.sh
        ii. evacuate_setup.sh
        iii. evacuate.sh
        iv. cleanup.sh

2. Configuration Files:
    a. Location: /etc/vm-ha
    b. Contents:
        i. vm-ha.conf
3. Other Files:
    a. Temp file: /var/tmp/evacuated_host.tmp

# Interacting with VM-HA service

In order to start/stop/restart the vm-ha service use the following commands:

1. Start the service
   ```
   service vm-ha start
   ```

2. Stop the service
   ```
   service vm-ha stop
   ```

3. Restart the service
   ```
   service vm-ha restart
   ```
4. Checking the status of the service
   ```
   service vm-ha status
   ```

# Logging system

This service has a logging system in place and logs important events.

1. In order to view the logs
   nano /var/log/vm-ha/vm-ha.log

# Pacemaker Cluster Administration

Some important commands for managing the cluster are as follows:

1. Checking the status of pcs cluster

```
pcs status
pcs cluster status
pcs status nodes
crm_mon
```

2. To remove any failed actions from pcs:

```
Cd /opt/vm-ha
./cleanup.sh <remote-node>
```

For example:

```
./cleanup.sh Compute1-t4
```

# Node IPMI Settings

In order to view IPMI settings for any node use the following commands:

1. To view settings of any node, ssh into that node and run the following command:

```
Format:
ipmitool -I lanplus -H <ipmi-ip> -U <ipmi-username> -P <ipmi-password>
lan print 1
Example:
ipmitool -I lanplus -H 172.20.6.225 -U plumgrid -P plumgrid lan print 1
```

2. To change IP address, netmask, gateway of the node:

```
ipmitool lan set 1 ipsrc static
ipmitool lan set 1 ipaddr x.x.x.x
ipmitool lan set 1 netmask x.x.x.x
ipmitool lan set 1 defgw ipaddr x.x.x.x
ipmitool lan set 1 arp respond on
ipmitool lan set 1 auth ADMIN MD5
ipmitool lan set 1 access on
```

# Workflow of Events

Here is the workflow of the entire evacuation process

1. The vm-ha service detects compute node as down
2. Checks if the down compute node is already fenced/evacuated or not.
    a. If yes, no further action is done and the detection loop continues.
    b. If no, the service will get its ipmi credentials (ip, username & password) from the vm-ha.conf file and fence the compute node

3. After fencing has been performed the service now checks the status of nova-compute service on the fenced node:
    a. If nova-compute is UP, the service will keep checking the status
    b. If nova-compute is DOWN, the service will now start the evacuation procedure
4. The service gets the “EVACUATION_TARGET” field from the vm-ha.conf file and decides which evacuation model to choose:
    a. If the field is empty, N-to-N model is chosen and nova-scheduler decides on which compute node to evacuate the VMs
    b. If the field has only one compute node, N+1 model is chosen and the VMs are evacuated on the single target node
        i. Note: After one evacuation instance has taken place the service will now move to N-to-N model even if the evacuation_target is set to a single host
    c. If the field contains a list of compute nodes, N+M model is chosen and the VMs are evacuated on the M nodes one by one (one node is used per evacuation instance).
        i. Note: After M evacuation instances have taken place the service now choose N-to-N model for further evacuations instances even if specified list is a finite set of compute nodes.
5. After evacuation is done the service now goes back to detecting down compute nodes.

Some important things to note here are as follows:

1. Fencing means that the node is POWERED OFF. And will not power on automatically until the system administrator comes in and manually turns the off node back on.
2. The nodes mentioned as “EVACUATION_TARGET” will not spawn regular VMs as they are reserved only for evacuated VMs.
3. The recovery process of a fenced compute node is as follows:
    a. System admin turns the compute node back on. Either physically or by using the following commands:

```
ipmitool -I lanplus -H <ipmi-ip> -U <ipmi-username> -P <ipmi-password> power on
```

    b. When the node is turned back on the administrator needs to perform the following steps:

```
cd /opt/vm-ha
./cleanup.sh <hostname-of-compute-node>
```

    c. Now of the administrator wants to add the compute node back into the pool of compute nodes then the admin needs to enter the following command:

```
source /home/ubuntu/nova.rc
nova service-enable <hostname-of-compute-node> nova-compute
```

    d. If the administrator wants the newly UP compute node to become the evacuation target node then do not perform step ‘c’ and just edit the vm-ha.conf file and add

the hostname of this compute node in the “EVACUATION_TARGET” field and save the file. In order for the changes to take place, restart the vm-ha service.