awsmpi

Overview

`awsmpi` allows you to create/start/stop/terminate an MPI cluster on AWS.

Installation

Use `pip`. Python2 and Python3 are both OK.

```
pip install awsmpi
```

Before you use it:

Before using awsmpi, you must login AWS with `aws configure` and set your account information properly:

- AWS Access Key ID
- AWS Secret Access Key
- Region (e.g. `cn-north-1`)

Node information

As you create a cluster named `<name>` with `N` nodes, their hostnames will be: `<name>-1` `<name>-2` ... `<name>-N` respectively.

`<name>-1` is the master node and will be assigned an immutable public IP (AWS elastic IP). You are supported to SSH into this node.

As for MPI, `/etc/hostfile` stores all nodes' hostnames. Detailed information about MPI *hostfile* could be found in OpenMPI documentation.

Commands

1. Create an MPI cluster

```
awsmpi create <name> <node-count> <vm-type> <shared-volume-size>
```

- <*name*>: name of your cluster
- <*node-count*>: number of nodes
- <*vm-type*>: type of instance, like `c3.xlarge`
- <*shared-volume-size*>: size of shared volume in GB. At least 4 GB.

When creating a cluster, all nodes will be put to one placement-group if supported.
(Some types of instances do not support placement-group!)

2. SSH to the cluster

After you create a cluster with <*name*>, you may login the first node (also the master node).

```
# The password is "ubuntu" (without quotes)
# You may change the password if you desire.

ssh ubuntu@<master-node-ip>
```

3. Start/Stop the cluster

Have you created the cluster, you could start/stop it by:

```
awsmpi start <name>
awsmpi stop <name>
```

Freshly created cluster will be started automatically.

Remember to stop your cluster in time!

4. Show cluster information

Use the following command to show the cluster information.

The information contains number of nodes, master node IP, current status (started/stopped), and so on.

```
# They are identical
awsmpi show <name>
awsmpi describe <name>
```

5. Terminate the cluster

If you don't need the cluster any more, you should terminate it:

```
awsmpi terminate <name>
```

This will delete the cluster permanently.

Data Persistence

1. Cluster-shared data: /share

Cluster-shared data is mounted at `/share` (GlusterFS).

These data are persistent across cluster's stop & (re)start.

However, when terminating a cluster, these data are permanently lost.

2. Permanent data: /permanent

Permanent data is mounted at `/permanent` (GlusterFS).

Data in this directory will be persisted even if a cluster terminates.

HOW TO USE IT: Before you terminate a cluster, you may copy your data into `/permanent`. After creating a new cluster, copy your data out from `/permanent`. This is extremely slow, just for data persistence across clusters! Do not directly read from or write to this directory in normal use!

NOTE: This directory is shared by everyone. Don't touch others' data!