Using server groups

In Cleura Cloud, you can use server groups to control the scheduling of a group of servers.

Prerequisites

In order to use server groups you must use the OpenStack CLI. Make sure you have enabled it.

Policies

A server group can have one of four different policies: affinity, soft-affinity, anti-affinity or soft-anti-affinity.

Affinity

A server group with the policy of `affinity` will make sure that all the servers in that group are **always** placed on the same physical compute node.

Soft affinity

A policy of `soft-affinity` will **try to** make sure that all the servers in that group are placed on the same physical compute node, but ultimately will allow it if otherwise not possible.

Anti-affinity

A server group with the policy of `anti-affinity` will make sure that the servers in that group are **never** placed on the same physical compute node.

Soft anti-affinity

A policy of `soft-anti-affinity` will **try to** make sure that all the servers in that group are not placed on the same physical compute node, but ultimately will allow it if otherwise not possible.

Creating server groups

To create a server group, use the following command:

```
openstack server group create \
  --policy [affinity|soft-affinity|anti-affinity|soft-anti-affinity] \
  <server_group_name>
```

With an `anti-affinity` or `soft-anti-affinity` policy, you may also configure how many servers you want to allow on the same physical compute node. To do this, use the option `--rule max_server_per_host=<number>`, where `<number>` is the amount of servers to allow on the same physical compute node.

Creating servers using server groups

To apply a server group policy, you must specify the group when creating a server, as a *scheduling hint.* To do that, use the `--hint` parameter in the following command:

```
openstack server create --hint group=<server_group_id> [...] <server_name>
```

If you subsequently launch more servers referencing the same server group, Cleura Cloud concentrates or distributes them according to the server group's policy.

Troubleshooting common issues

If you keep creating servers within a server group with a policy of `anti-affinity`, you will eventually exceed the total amount of physical compute nodes in the region. The command will still succeed, but the server will subsequently fail to be scheduled to a compute node. Instead, it will assume the `ERROR` status with the following `fault` message: *No valid host was found. There are not enough hosts available.*

```
$ openstack server show -c fault -c status <server_id>
+--------+----------------------------------------------------+
| Field  | Value                                              |
+--------+----------------------------------------------------+
| fault  | {'code': 500, 'created': '2022-12-23T11:21:33Z', |
|        | 'message': 'No valid host was found.               |
|        | There are not enough hosts available.'}            |
| status | ERROR                                              |
+--------+----------------------------------------------------+
```

This is normal as Cleura Cloud cannot schedule the server on a different physical compute node because there already is a server in the server group on every node. The same scheduling error and “fault” message will occur when using a server group with a policy of `affinity` as well, when you create more servers than a physical compute node can host.

However when using a soft affinity policy, such as `soft-affinity` or `soft-anti-affinity`, the scheduler is allowed to break the server group’s policy if it is unable to uphold it. This means you may want to verify that your servers are on the same or on different physical compute nodes by looking at the *hostId* value of your servers.

```
$ openstack server show -c hostId <server_id>
+--------+------------------------------------------------------------+
| hostId | 8fae028139411e9e125d5f39895bef79f916aefce6003a7888de105d |
+--------+------------------------------------------------------------+
```

`hostId` is a unique identifier for each physical compute node. By comparing this value on your different servers you can be sure if your server group policy is being upheld or not.

> It’s not possible to compare `hostId` between different projects because the values are unique for each project.

Last update: 2022-12-21

Created: 2022-12-21

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