

OpenStack: How do I extend an OpenStack cluster with extra controller/network nodes?

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Scenario:

You have installed OpenStack with one controller. Now you want to add two more controllers to expand the database cluster.

Adding one more controller/network to your OpenStack cluster can be done by following these steps:

1. Decide on the nodes you want to use as controller/network nodes
2. Make sure the interfaces are configured on the network nodes that you want to add

For example :

If you have a node001 with two interfaces -- one interface for the external OpenStack network, and the other interface for the internal network -- then make sure that you match the interfaces configuration on your new nodes.

Now, append both the OpenStackControllers and OpenStackNetworkNodes configuration overlay to the new nodes:

```
[am-c-02-08-t-c7u2-1->configurationoverlay]% append openstackcontrollers nodes node002,node003
```

```
[am-c-02-08-t-c7u2-1->configurationoverlay*]% append openstacknetworknodes nodes node002,node003
```

```
[am-c-02-08-t-c7u2-1->configurationoverlay*]% commit
```

Make sure you restart both of your new nodes after you commit:

```
[am-c-02-08-t-c7u2-1->device]% reboot -n node002,node003
```

While you wait for your two nodes to be rebooted, log into your first controller/network node.

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Then install xtrabackup,

https://www.percona.com/doc/percona-xtrabackup/2.2/installation/yum_repo.html

on the controller/network node.

After installation, execute the following :

On your head node :

```
#cat /root/.galerarc
```

```
#ssh controller-1
```

```
[root@node001 ~]# mkdir -p /cm/shared/apps/openstack/backup/
```

```
[root@node001 ~]# innobackupex --galera-info --user=root --password=password  
--socket=/var/lib/mysql/mysql.sock /cm/shared/apps/openstack/backup/
```

The previous command will create a backup directory under /cm/shared/apps/openstack/backup/

with a name derived from the date and time of the day.

```
[root@node001 ~]# innobackupex -apply-log --galera-info --user=root  
--password=2O1711H542KV24Kg --socket=/var/lib/mysql/mysql.sock  
/cm/shared/apps/openstack/backup/BACKUP DIRECTORY/
```

First we will add a file to this backup before we stream it to the new nodes

1.

```
[root@node001 2017-02-08_12-03-20]# cat xtrabackup_galera_info
```
2.

```
#touch grastate.dat
```
3.

```
#cat xtrabackup_galera_info  
7c6112b1-ede7-11e6-9afb-fb7093d22da5:6336
```
4. The content of xtrabackup_galera_info should be used to construct the content of grastate.dat, which should look like this:

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```
# GALERA saved state
```

```
version: 2.1
```

```
uuid: 7c6112b1-ede7-11e6-9afb-fb7093d22da5
```

```
seqno: 6336
```

```
safe_to_bootstrap: 0
```

Notice that 6336 is the number after “:” in xtrabackup_galera_info

Now we need to copy this backup to /var/lib/mysql to both of your new nodes

```
#ssh node002
```

```
#cd /var/lib/mysql
```

```
# rm -rf *
```

```
#rsync -avzp --progress /cm/shared/apps/openstack/backup/2017-02-08_12-03-20/ .
```

```
#chown -R mysql:mysql /var/lib/mysql
```

Repeat the previous steps to also rsync it over to your third node

When done, go back to your head node and execute the following :

```
[root@am-c-02-08-t-c7u2-1 ~]# cmsg
```

```
[am-c-02-08-t-c7u2-1]% configurationoverlay
```

```
[am-c-02-08-t-c7u2-1->configurationoverlay]% append galeranodes nodes node002..node003
```

```
[am-c-02-08-t-c7u2-1->configurationoverlay*]% commit
```

To confirm the controllers are there, please log into any of your new controllers and execute the following :

```
[root@node001 ~]# mysql -uroot -ppassword
```

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```
MariaDB [(none)]> show status like 'wsrep_cluster_size';
```

Your output should be :

```
+-----+
| Variable_name | Value |
+-----+
| wsrep_cluster_size | 3 |
+-----+
1 row in set (0.00 sec)
```

Unique solution ID: #1351

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Last update: 2017-02-13 16:27