CS300 Couchbase NoSQL Server Administration

Lab 5 Exercise Manual

Release: 6.5.1

Revised: June 22nd, 2020

Lab #5: GSI Indexes and N1QL

Objective: This 1-hour lab will first walk you through adding nodes #3 and #4 back into the cluster. Then create and use N1QL indexes.

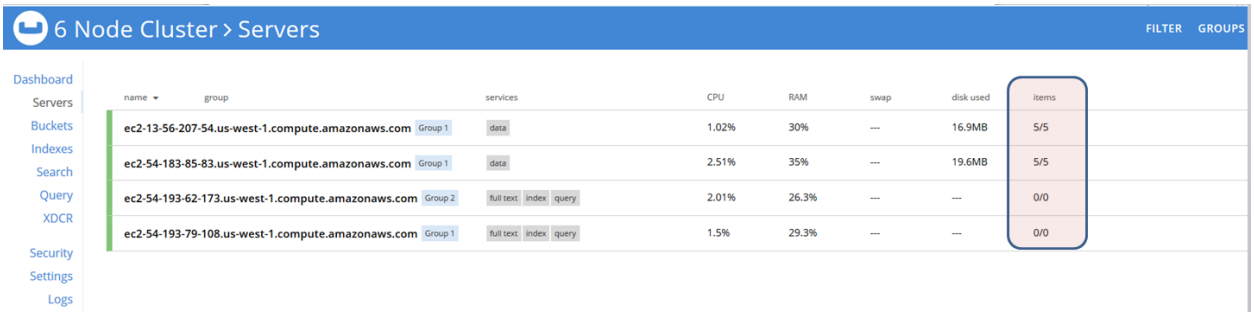
Overview: **The following high-level steps are involved in this lab:**

- Add nodes #3 and #4 back into cluster
- Add two sample buckets for beer-sample and gamesim-sample into the cluster

Add Nodes #3 and #4 back into the Cluster:

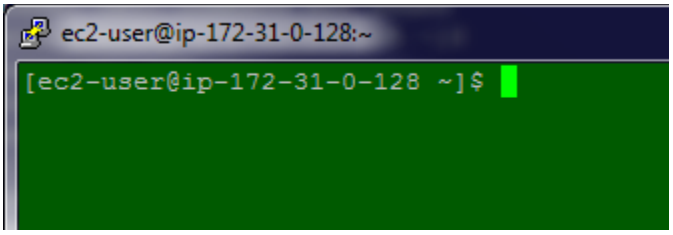
The last lab concluded with leaving the cluster in a degraded state with just 2 healthy data service nodes (Node #1 and #2) running in Server Group 1. In this section, we'll re-join Nodes #3 and #4 into the existing cluster using the Web UI.

The Server Nodes page should currently show 2 nodes in your environment, which 5 Active items on each of the 2 nodes. In your specific environment, you may see 6 items on one node and 4 items on the other node… this is normal also. The items in Couchbase will not necessarily be split exactly evenly across the 2 nodes every time.



First, we need to start the Couchbase service on Nodes #3 and #4.

Log into Node #3 (Green VM):



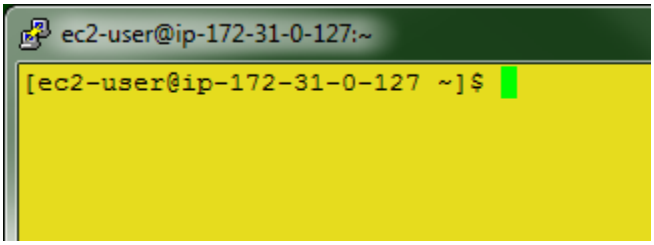
Run the following command to start Couchbase server and check its status:

```
[ec2-user@couchbase03 ~]$ sudo systemctl start couchbase-server
[ec2-user@Couchbase03 ~]$
```

Wait 15 seconds for the service to start and then verify the status:

```
[ec2-user@ip-172-31-0-128 ~]$ sudo systemctl status couchbase-server
couchbase-server is running
```

Next, log into Node #4 (Yellow VM) and start Couchbase there as well:



Run the following command to start Couchbase server and check its status:

```
[ec2-user@couchbase04 ~]$sudo systemctl start couchbase-server
[ec2-user@couchbase04 ~]$
```

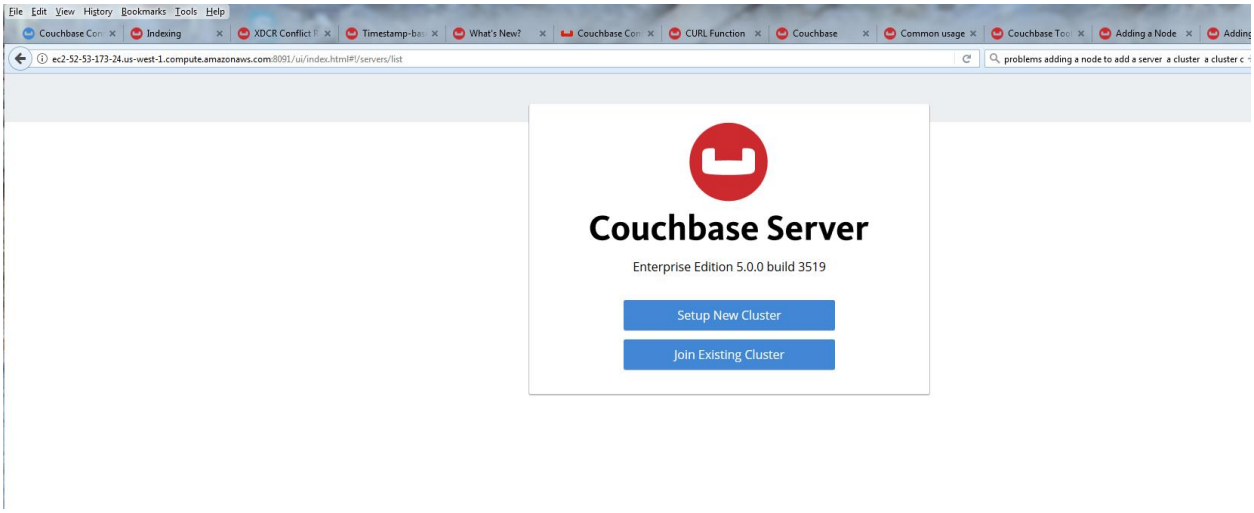
Wait 15 seconds for the service to start and then verify the status:

```
[ec2-user@ip-172-31-0-127 ~]$ sudo systemctl status couchbase-server
● couchbase-server.service - Couchbase Server
   Loaded: loaded (/usr/lib/systemd/system/couchbase-server.service; enabled; vendor preset:
disabled)
   Active: active (running) since Wed 2016-07-20 14:59:05 EDT; 22s ago
     Docs: http://docs.couchbase.com
  Process: 29766 ExecStop=/opt/couchbase/bin/couchbase-server -k (code=exited, status=0/SUCCESS)
  Process: 2061 ExecStart=/opt/couchbase/bin/couchbase-server -- -noinput -detached (code=exited,
status=0/SUCCESS)
 Main PID: 2131 (beam.smp)
```

```
   CGroup: /system.slice/couchbase-server.service
           ├─2074 /opt/couchbase/lib/erlang/erts-5.10.4.0.0.1/bin/epmd -daemo...
           ├─2106 /opt/couchbase/lib/erlang/erts-5.10.4.0.0.1/bin/beam.smp -A...
           ├─2131 /opt/couchbase/lib/erlang/erts-5.10.4.0.0.1/bin/beam.smp -A...
           ├─2159 sh -s disksup
           ├─2161 /opt/couchbase/lib/erlang/lib/os_mon-2.2.14/priv/bin/cpu_su...
           ├─2162 /opt/couchbase/lib/erlang/lib/os_mon-2.2.14/priv/bin/memsup...
           ├─2163 inet_gethost 4
           ├─2164 inet_gethost 4
           ├─2292 /opt/couchbase/lib/erlang/erts-5.10.4.0.0.1/bin/beam.smp -P...
           ├─2317 sh -s disksup
           ├─2318 /opt/couchbase/lib/erlang/lib/os_mon-2.2.14/priv/bin/memsup...
           ├─2319 /opt/couchbase/lib/erlang/lib/os_mon-2.2.14/priv/bin/cpu_su...
           ├─2324 /opt/couchbase/bin/priv/godu
           ├─2325 sh -s ns_disksup
           ├─2329 /opt/couchbase/bin/priv/godu
           ├─2334 /opt/couchbase/bin/saslauthd-port
           ├─2336 portsigar for ns_1@ec2-54-209-38-55.compute-1.amazonaws.com...
           ├─2366 /opt/couchbase/bin/goport
           ├─2370 /opt/couchbase/bin/goxdcr -localProxyPort=11215 -sourceKVAd...
           ├─2379 /opt/couchbase/lib/erlang/erts-5.10.4.0.0.1/bin/beam.smp -P...
           └─2396 /opt/couchbase/bin/memcached -C /opt/couchbase/var/lib/couc...

Jul 20 14:59:01 Couchbase04 systemd[1]: Starting Couchbase Server...
Jul 20 14:59:02 Couchbase04 systemd[1]: PID file /opt/couchbase/var/lib/couc....
Jul 20 14:59:05 Couchbase04 systemd[1]: couchbase-server.service: Supervisin....
Jul 20 14:59:05 Couchbase04 systemd[1]: Started Couchbase Server.
Hint: Some lines were ellipsized, use -l to show in full.
```

Point your browser to the URL for node 3:
http://ec2-13-57-48-149.us-west-1.compute.amazonaws.com:8091/ui/index.html



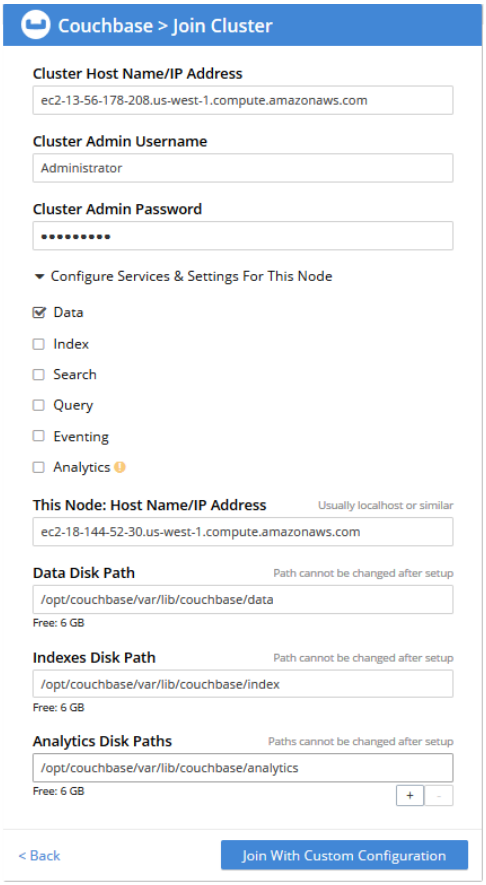
Choose Join Existing Cluster

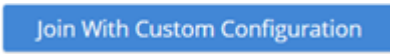
Couchbase

Fill in the information required making sure to use the Amazon ec2 address for both cluster and joining node name.

Select data service(deselect other services)

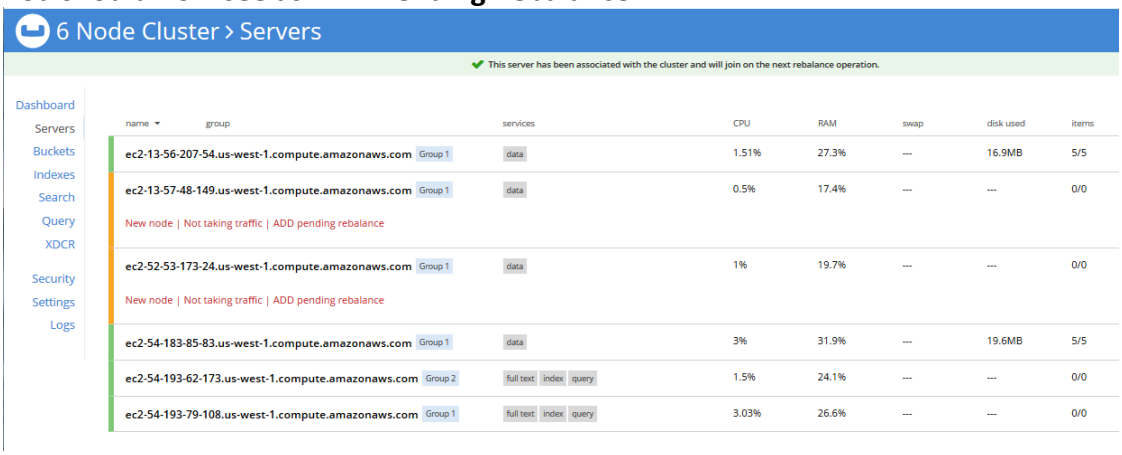
Edit index path to /opt/couchbase/var/lib/couchbase/index



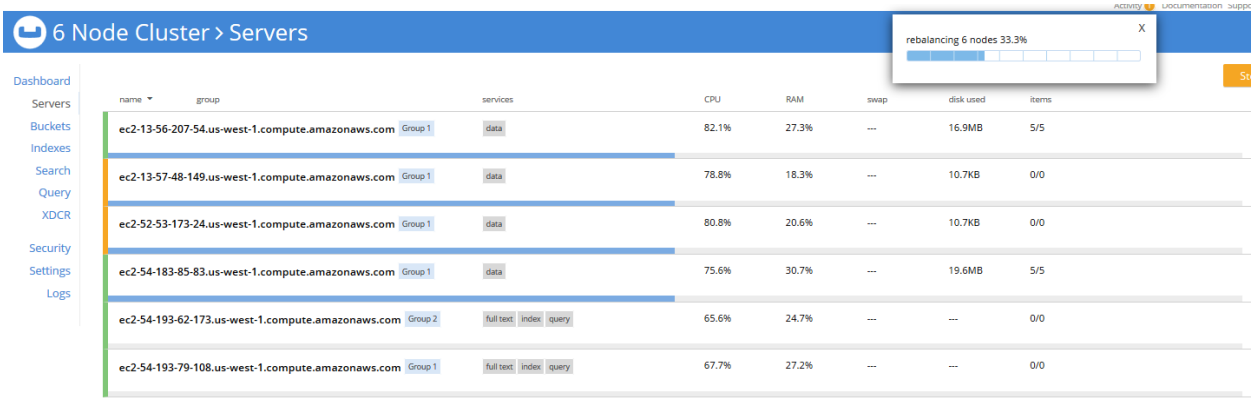
Click 

Repeat this procedure for Node #4

You should now see as ADD Pending Rebalance.

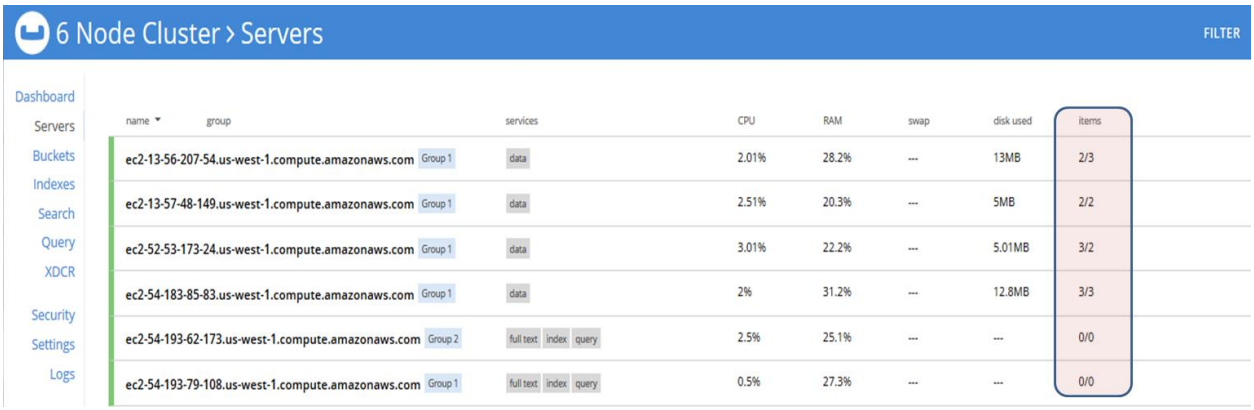


Click the Rebalance button 

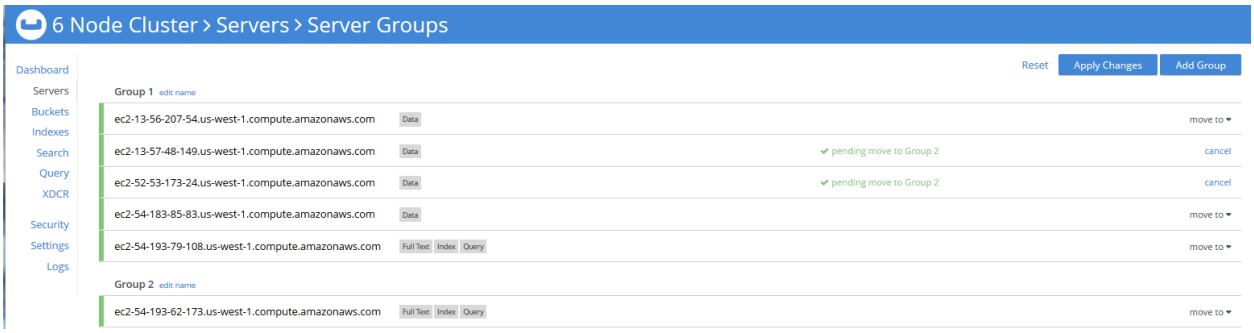


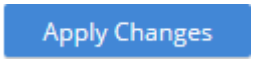
The rebalance operation will start running:

Within about 2 minutes the cluster should fully rebalance and you should see the Items' active and replica copies scattered across the 4 data service nodes:



Go to the servers links and then to the groups link and place both of the newly joining nodes(3 and 4) into group 2



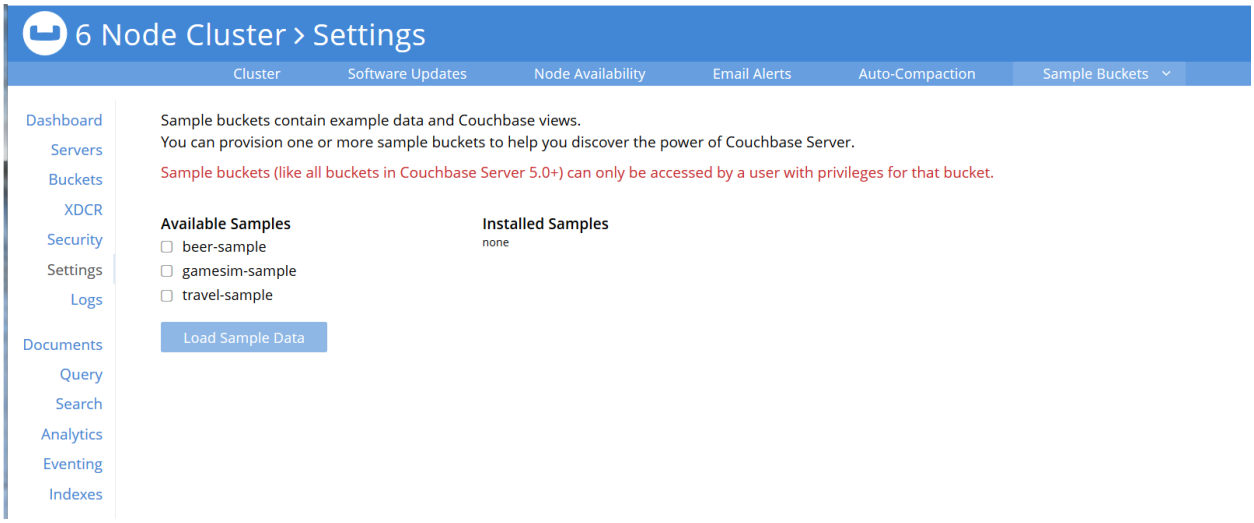
Click 

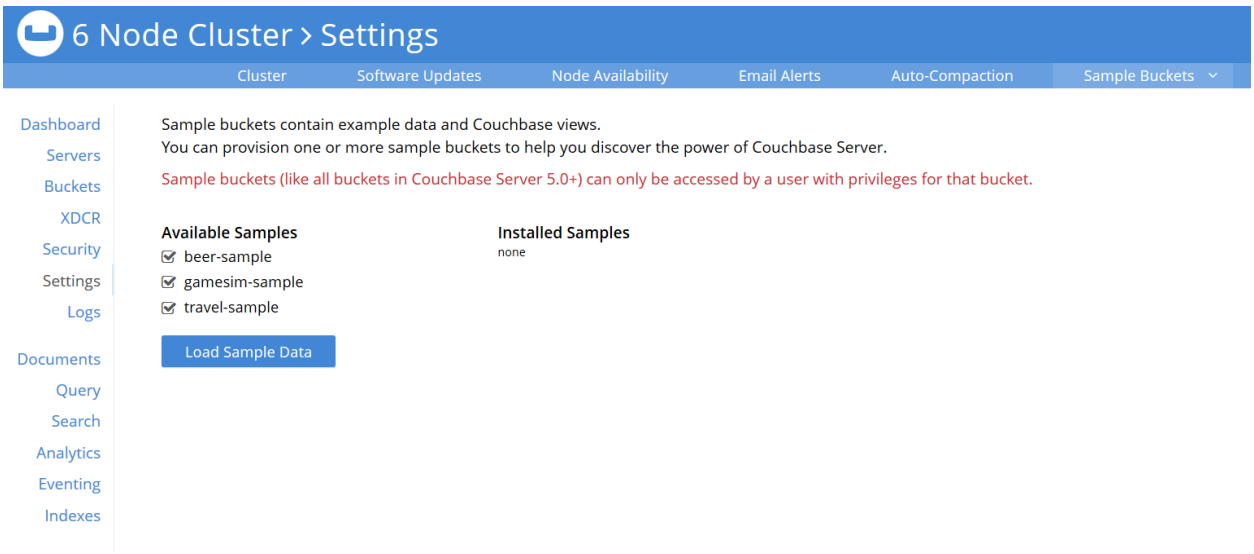
Then rebalance cluster.

Add 3 sample buckets into the cluster:

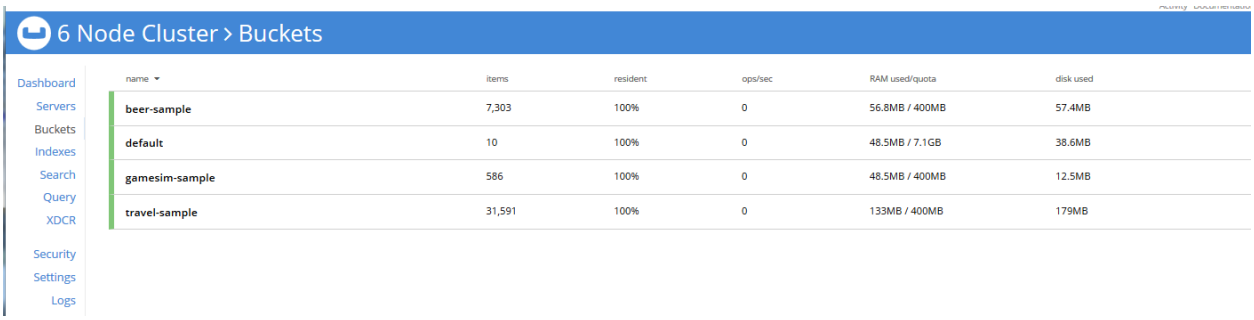
Next we will add the beer-sample and gamesim-sample buckets back into the cluster so we can generate views upon them.

Click on Settings at the top right, then choose “Sample Buckets”. Under “Available Samples” place a check mark next to “beer-sample” , “gamesim-sample” and “travel sample” then click ‘Load Sample Data’:





click on “Data Buckets” link in the side menu to verify that the 3 sample buckets have indeed been loaded. You should see 7,303 items in the beer-sample bucket and 586 items in the gamesim-sample bucket and finally 31591 items in the travel-sample bucket:

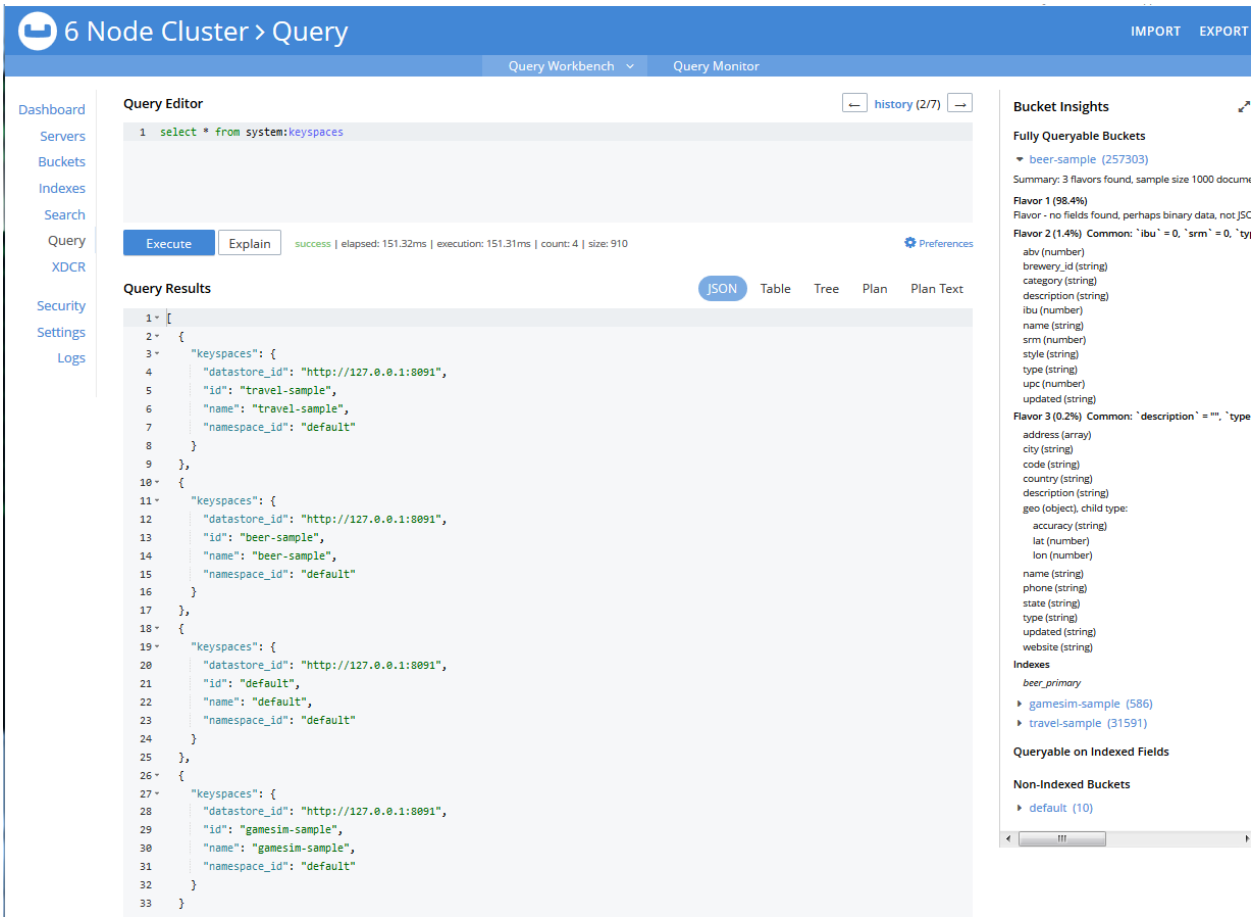


Lab #5: Global Secondary Indexes and N1QL

Objective: This lab will first walk you through creating indexes and views using the N1QL prompt. And cover some of the more common N1QL statements.

Overview: **The following high-level steps are involved in this lab:**

- Use the Couchbase Query Tool to:
- Create Primary Beer index
- Create Secondary beer indexes
- Use the “Explain” N1QL statement
- Use the “Select” N1QL statement to display keyspaces and indexes
- Connect to a couchbase query service node using cbq command from a query node and from an application server.



Try pasting the following commands into your Query tab Execute window in the Couchbase GUI

cbq> select * from system:keyspaces;

cbq> select * from system:indexes;

cbq> select * from `beer-sample` limit 10;

cbq> create primary index on `beer-sample` using view;

```
cbq> select * from `beer-sample` limit 1;

cbq> select * from `beer-sample` limit 10;

cbq> create primary index on `beer-sample` using gsi;

cbq> create primary index on `default` using view;

cbq> create primary index on `default` using gsi;

cbq> create primary index on `game-sample` using view;

cbq> create primary index on `game-sample` using gsi;

        "msg": "Keyspace not found keyspace game-sample - cause: No bucket named game-
sample"
   "status": "fatal",

cbq> create primary index on `gamesim-sample` using gsi;

cbq> create index levels on `gamesim-sample`(level) using gsi;

cbq>create index Beer_abv on `beer-sample`(abv) using gsi;

cbq> create index  Beer_by_state on `beer-sample`(state)  using gsi;

cbq> create index  Beer_by_state on `beer-sample`(state)  using view;

cbq> create index  Beer_by_phone  on  `beer-sample`(phone)  using gsi;

cbq> create index Beer_abv on `beer-sample`(abv) using gsi;
```

Now repeat the commands if you have time in the cbq> command line prompt.

Change the output format from json to table, Tree, Plan & Plan text

Try some of the sample commands again using the explain button.