Cluster Administration

Cluster Administration

Administration tools used with Couchbase Server are

- Couchbase Web Console
- Command-line interface (CLI)
- REST API.

Cluster Operations

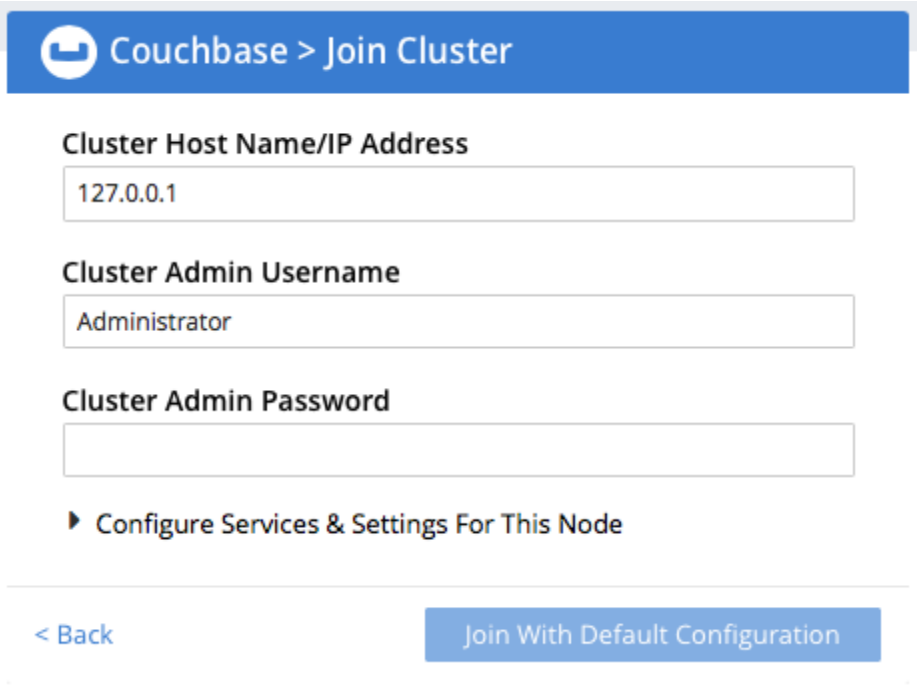
Cluster operations include starting, stopping, adding nodes, and removing the server from the cluster.

- **Adding a Node**
  Full Administrators and Cluster Administrators
- **Removing a Node**
  Full Administrators and Cluster
- **Failing over a Node**
  Rebalancing a Cluster
  re-distributing information among the available nodes
- **Rejoining a Cluster**

Never stop or restart Couchbase Server before removing that node from a cluster.

Add a Node during Initial Installation

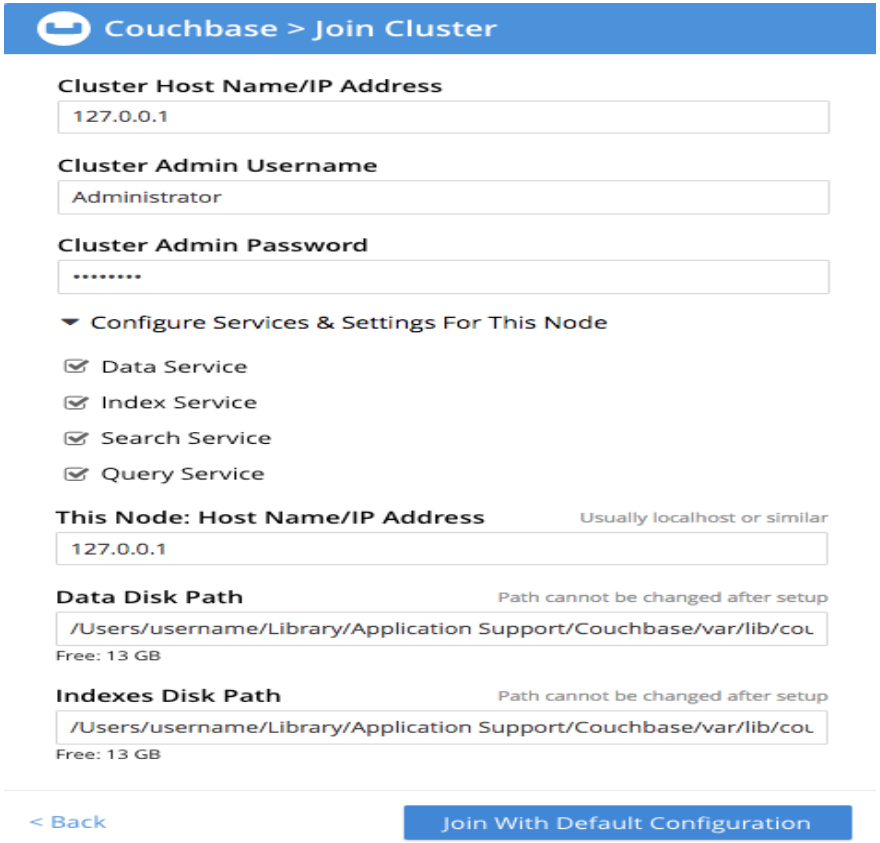
Join a cluster now



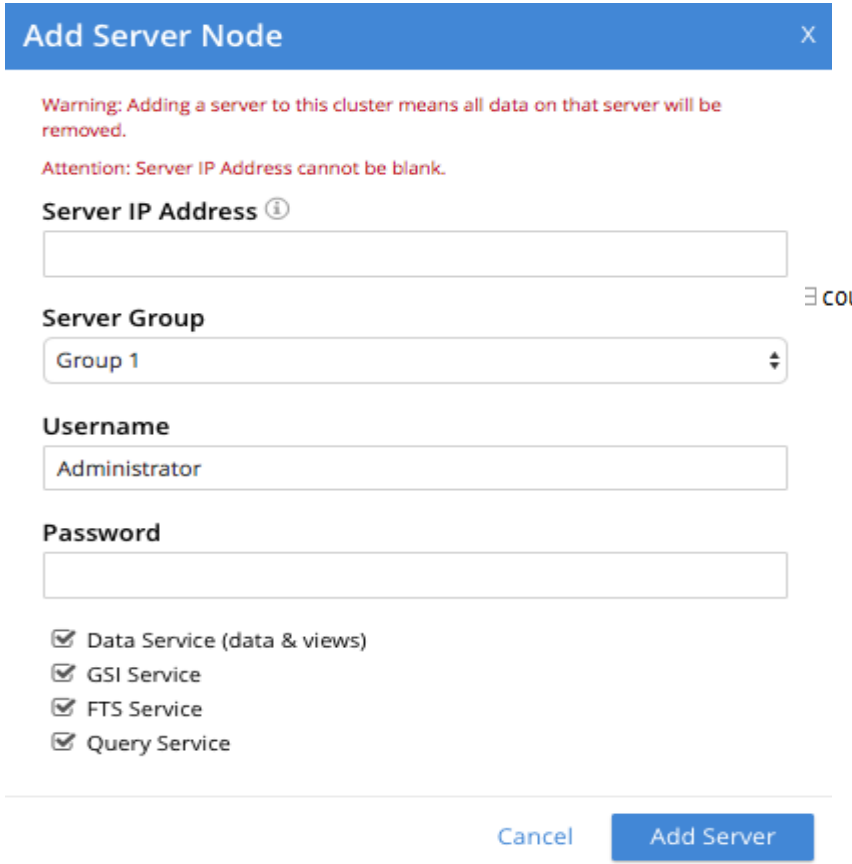

```
// Set up services. (Note that %2C is the ASCII Hex mapping to the comma character.)

curl -u Administrator:password -v -X POST http://192.168.42.101:8091/node/controller/setupServices \
-d 'services=kv%2Cn1ql%2Cindex%2Cfts'
```

Add a Node during Initial Installation…

Join a cluster now
→ Advance Config.



Add Nodes - Existing Couchbase Node



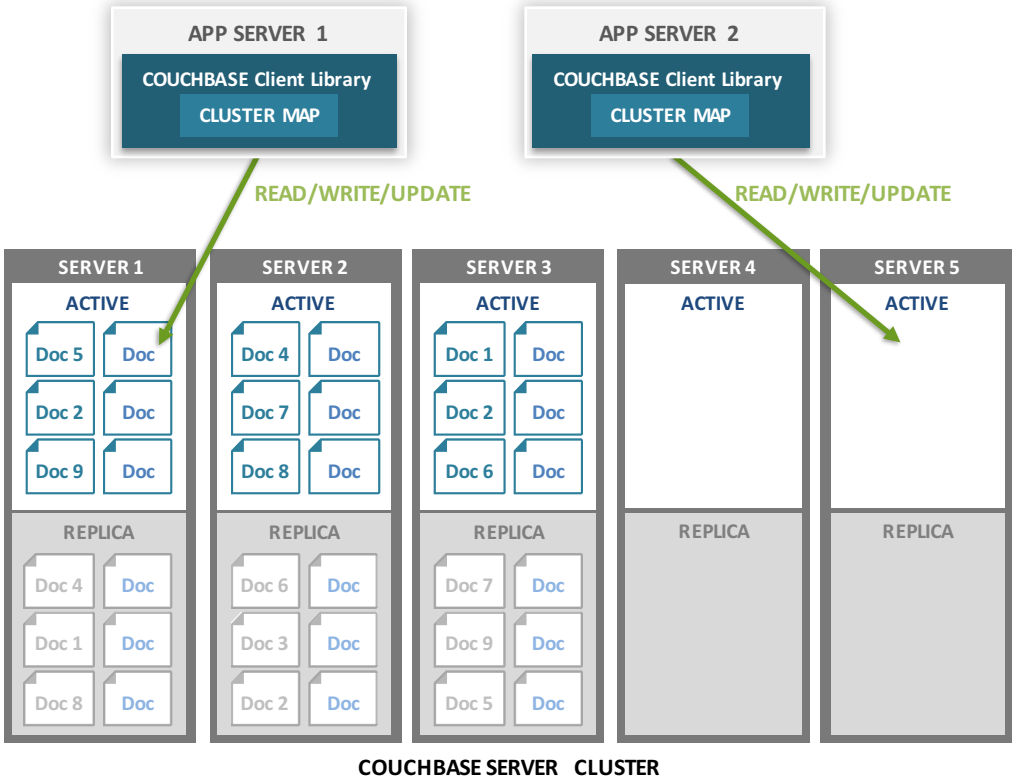

```
couchbase-cli server-add \
             --cluster=localhost:8091  --user cluster-username \
             --password cluster-password \
             --server-add=192.168.0.72:8091  --server-add-username=node-username \
             --server-add-password=node-password \
             --services=data,index,query
```

Add Nodes ..

- Any data currently stored on the server will be deleted.
- If the server is currently part of another cluster, it will be removed and marked as failed over in that cluster.
- New node doesn't become an active member of the cluster until you rebalance the cluster.

Once a node is added with a specific service, you cannot change the type of services on that node. You must remove the node, rebalance, and then add it back to the cluster with the services of your choice.

Add Nodes to Cluster



Two servers added
One-click operation

Docs automatically rebalanced across cluster
Even distribution of docs
Minimum doc movement

Cluster map updated

App database calls now distributed over larger number of servers

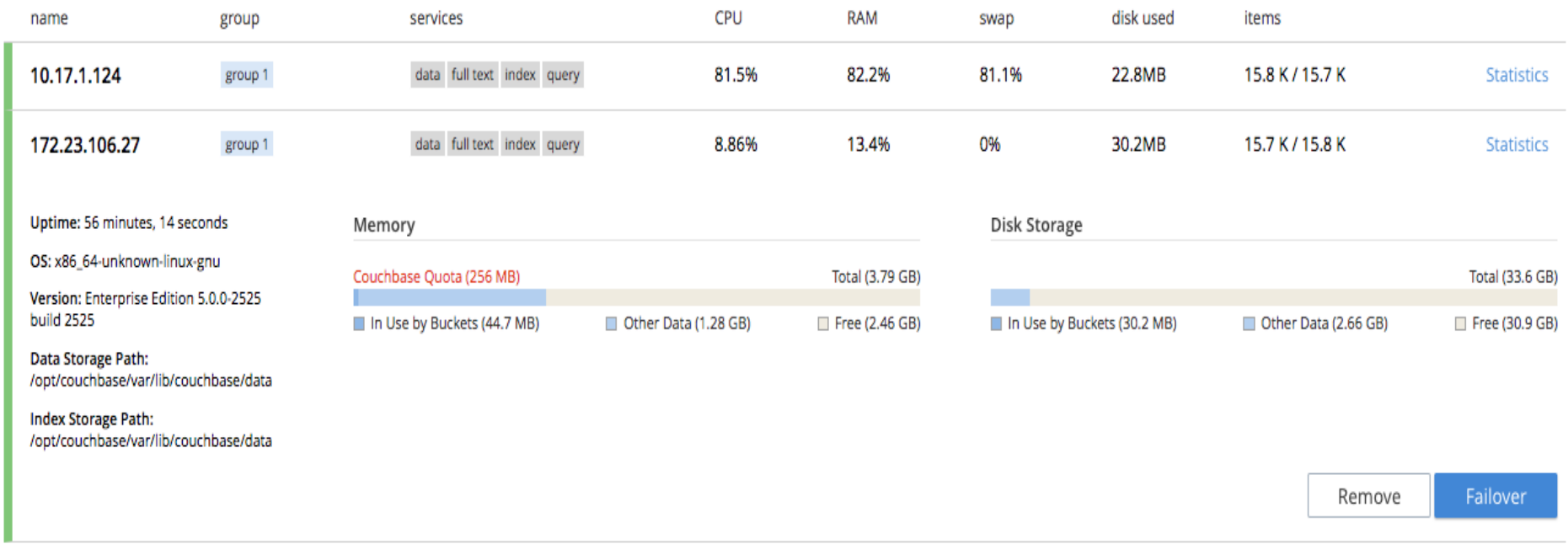
User Configured Replica Count = 1

Removing a Node

Removing a Node

- **Data service** - reduced capacity to handle key/value workload.
- **Index service** - index data loss on that node. This service does not support rebalance. When a node running the index service is removed or failed over, indexes that reside on the node are not moved to another node after rebalancing. These indexes are no longer available for queries and are dropped.
- **Query service** - loss of query capability in that node.

Remove Nodes via UI



Click **Remove** to mark the node for removal.
After the node is removed, click on **Rebalance**.

Removing Node

It is a must to perform a rebalance operation to complete the removal process

```
> couchbase-cli rebalance --cluster=127.0.0.1:8091 \
          --user Administrator --password Password \
          --server-remove=192.168.0.73
```

Failing over a Node

Types of failovers

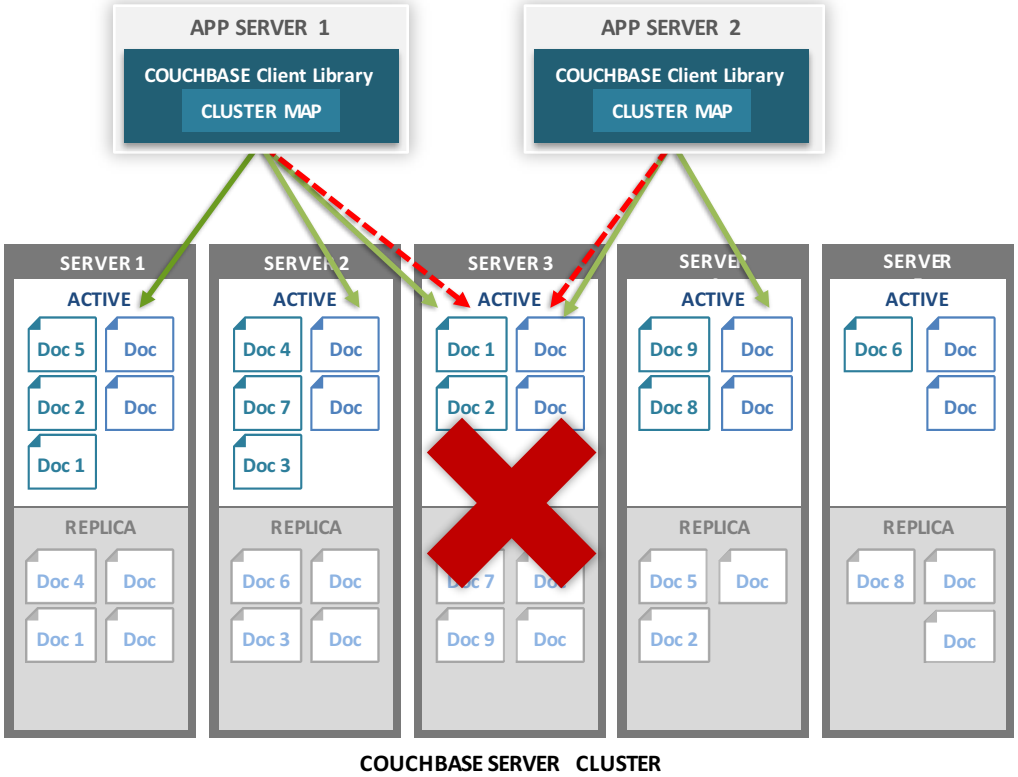
Three types of failovers:

- *graceful*
- *hard*
- *automatic*.

Graceful failover

- Graceful failover is the proactive ability to remove a Data service node from the cluster in an orderly and controlled fashion.
- It is an online operation with zero downtime that is achieved by promoting replica vBuckets on the remaining cluster nodes to active and the active vBuckets on the affected node to dead.
- This type of failover is primarily used for planned maintenance of the cluster.

Fail Over Node



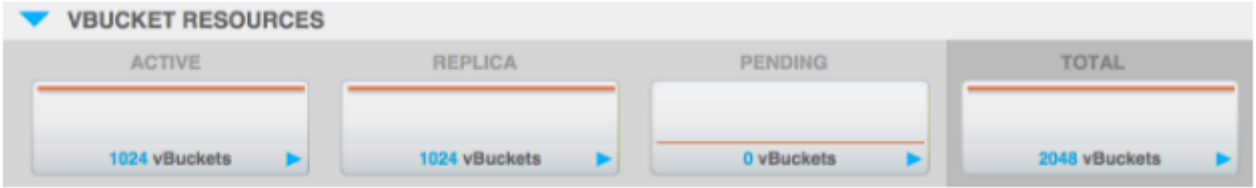
- App servers accessing docs
- Requests to Server 3 fail
- Cluster detects server failed
  - Promotes replicas of docs to active
  - Updates cluster map
- Requests for docs now go to appropriate server
- Typically rebalance would follow

User Configured Replica Count = 1

Graceful failover

Use Graceful failover only:

- All nodes in the cluster are healthy
- Each bucket in the cluster has all active vBuckets and at least one full set of replica vBuckets.



A graceful failover can also be halted mid-process.

Hard failover

- Hard failover is the ability to drop a node quickly from the cluster when it has become unavailable or unstable.
- Dropping a node is achieved by promoting replica vBuckets on the remaining cluster nodes to active.
- Hard failover is primarily used when there is an unplanned outage of a node.

Hard failover

Can be initiated in multiple ways:

- Manually via the Couchbase Web Console
- Using the CLI or RESTful API from a script/program/ops platform
- Using the automatic failover functionality performed by the Couchbase Cluster Manager

Automatic failover

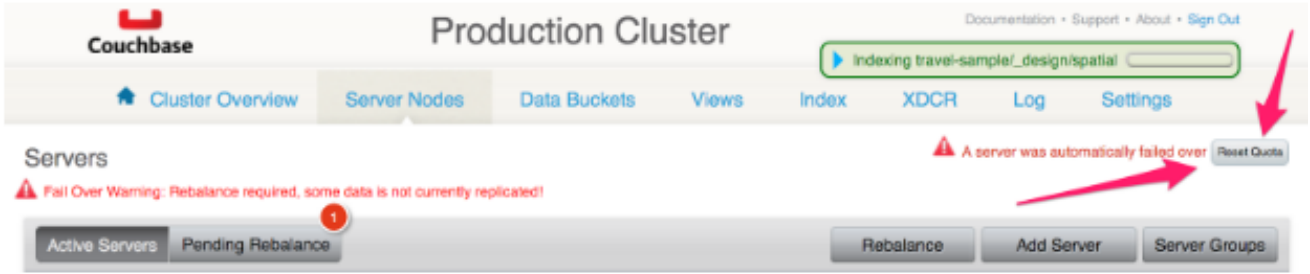
- Automatic failover is the built-in ability to have the Cluster Manager detect and determine when a node is unavailable and then initiate a hard failover.
- Disabled by default
- Available only on clusters that contain at least three nodes running the Data service.
- Designed to failover a node only if that node is the only one down at a given time

Automatic failover…

By default, there is a 120 second delay before a node will be automatically failed over by the Cluster Manager.

Automatic Failover Counter :

- an internal counter that indicates to the cluster if a node has been failed over.
- Reset it after issue get resolved.




```
>$ curl -i -u cluster-username:cluster-password http://localhost:8091/settings/autoFailover/resetCount
```

Lab : Cluster Operations - 120 Minutes (D)