

Basic Cluster Setup

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Configuration of a Riak cluster requires instructing a node to listen on a non-local interface (i.e., not `127.0.0.1`), and then joining nodes together for cluster participation.

Most configuration changes will be applied to the `app.config` file located in your `rel/riak/etc/` directory (if you compiled from source) or `/etc/riak/` (if you used a binary install of Riak).

The commands below presume that you are running from a source install, but if you have installed Riak with a binary install, you can substitute the usage of `bin/riak` with `sudo /usr/sbin/riak` and `bin/riak-admin` with `sudo /usr/sbin/riak-admin`.

Note on changing `-name` value

If possible, you should avoid starting Riak prior to editing the `-name` parameter in `vm.args` as described below. If you have already started Riak with the default settings, you cannot change the `-name` setting and then successfully restart the node.

If you cannot restart after changing `-name` value you have two options:

1. Discard the existing ring metadata by removing the contents of the `ring` directory. This will require rejoining all nodes into a cluster again
2. Rename the node using the `riak-admin cluster replace` command. This will not work if you have previously only started riak with a single node.

Configure the First Node

First, stop your Riak node if it is currently running:

```
bin/riak stop
```

Change the default IP address located under `http{}` in the `riak_core` section of `app.config`. (The port, 8098, does not need to be changed.) Let's say our machine's IP address is 192.168.1.10. (This is just an example IP address. Yours will be specific to your machine.)

```
{http, [ {"127.0.0.1", 8098 } ]},
```

becomes

```
{http, [ {"192.168.1.10", 8098 } ]},
```

The same configuration should be changed for the Protocol Buffers interface if you intend on using it:

```
{pb, [ {"127.0.0.1", 8098 } ]},
```

becomes

```
{pb, [ {"192.168.1.10", 8098 } ]},
```

Next edit the `etc/vm.args` file and change the `-name` to the correct hostname:

```
-name riak@127.0.0.1
```

becomes

```
-name riak@server.example.com
```

Node Names

Use fully qualified domain names (FQDNs) rather than IP addresses for the cluster member node names. For example, “riak@cluster.example.com” and “riak@192.168.1.10” are both acceptable node naming schemes, but using the FQDN style is preferred.

Once a node has been started, in order to change the name you must either remove ring files from the data directory, `riak-admin reip` the node, or `riak-admin cluster force-replace` the node.

Start the Riak node:

```
bin/riak start
```

If the Riak node has been previously started, you must use `riak-admin cluster replace` to change the node name and update the node's ring file.

```
bin/riak-admin cluster replace riak@127.0.0.1 riak@192.168.1.10
```

Single Nodes If a node is started singly using default settings (as, for example, you might do when you are building your first test environment), you will need to remove the ring files from the data directory after you edit `etc/vm.args`. `riak-admin cluster replace` will not work as the node has not been joined to a cluster.

As with all cluster changes, you need to view the plan `riak-admin cluster`

`plan`, then run `riak-admin cluster commit` to finalize the changes.

The node is now properly configured to join other nodes for cluster participation. Proceed to adding a second node to the cluster.

Add a Second Node to Your Cluster

Repeat the above steps for a second host on the same network. Once the second node has started, use `riak-admin cluster join` to join the second node to the first node, thereby creating an initial Riak cluster.

```
bin/riak-admin cluster join riak@192.168.1.10
```

Output from the above should resemble:

Success: staged join request for `riak@192.168.1.11` to `riak@192.168.1.10`

Next, plan and commit the changes:

```
bin/riak-admin cluster plan  
bin/riak-admin cluster commit
```

After the last command, you should see:

```
Cluster changes committed
```

If your output was similar, then the second Riak node is now part of the cluster and has begun syncing with the first node. Riak provides several ways to determine the cluster ring status; here are two ways to examine your Riak cluster's ring:

Using the `riak-admin` command:

```
bin/riak-admin status | grep ring_members
```

With output resembling the following:

```
ring_members : ['riak@192.168.1.10','riak@192.168.1.11']
```

Using the `riak attach` command:

```
riak attach
1> {ok, R} = riak_core_ring_manager:get_my_ring().
{ok,{chstate,'riak@192.168.1.10',.....
(riak@192.168.52.129)2> riak_core_ring:all_members(R).
['riak@192.168.1.10','riak@192.168.1.11']
```

To join additional nodes to your cluster, repeat the above steps. You can also find more detailed instructions about [Adding and Removing Nodes](#) from a cluster.

Ring Creation Size

All nodes in the cluster must have the same initial `ring_creation_size` setting in order to join, and participate in cluster activity. This setting can be adjusted in `app.config`.

Check the value of all nodes if you receive a message like this:

```
Failed: riak@10.0.1.156 has a different ring_creation_size
```

Running Multiple Nodes on One Host

If you built Riak from source code, or if you are using the Mac OS X pre-built package, then you can easily run multiple Riak nodes on the same machine. The

most common scenario for doing this is to experiment with running a Riak cluster.
(Note: if you have installed the .deb or .rpm package, then you will need to download and build Riak source to follow the directions below.)

To run multiple nodes, make copies of the `riak` directory.

- If you ran `make all rel`, then this can be found in `./rel/riak` under the Riak source root directory.
- If you are running Mac OS X, then this is the directory where you unzipped the .tar.gz file.

Presuming that you

copied `./rel/riak` into `./rel/riak1`, `./rel/riak2`, `./rel/riak3`, and so on:

- In the `app.config` file for each node, change `handoff_port`, `pb_port`, and the port number specified in the `http{}` section to unique ports for each node.
- In `vm.args`, change the line that says `-name riak@127.0.0.1` to a unique name for each node, for example: `-name riak1@127.0.0.1`.

Now, start the nodes, changing path names and nodes as appropriate:

```
./rel/riak1/bin/riak start
./rel/riak2/bin/riak start
./rel/riak3/bin/riak start
(etc.)
```

Next, join the nodes into a cluster:

```
./rel/riak2/bin/riak-admin cluster join riak1@127.0.0.1
./rel/riak3/bin/riak-admin cluster join riak1@127.0.0.1
./rel/riak2/bin/riak-admin cluster plan
./rel/riak2/bin/riak-admin cluster commit
```

Multiple Clusters on One Host

Using the above technique it is possible to run multiple clusters on one computer. If a node hasn't joined an existing cluster it will behave just as a cluster would.

Running multiple clusters on one computer is simply a matter of having two or more distinct nodes or groups of clustered nodes.

These May Also Interest You

- [Downloads](#)
- [Log Messages FAQs](#)
- [Operating Riak FAQs](#)
- [Configuration Files](#)
- [Load Balancing and Proxy Configuration](#)
- [Configuring Secondary Indexes](#)