Restoring a Backup (Kubernetes)

Unit 2.2.3

Restoring a Backup

These instructions assume that you're running a three-node HA RKE cluster for Rancher. If you're running a single-node cluster, skip the step where you add the additional two nodes and continue with repointing the load balancer or DNS entry.

Shut Down the Old Cluster

When you shut down the Rancher cluster that you're replacing, all of the downstream clusters will continue to operate. Users who connect through the Rancher server to manage clusters will be unable to do so until the Rancher cluster is restored, but all operational workloads will continue to run. Kubernetes will continue to maintain state.

We shut down the old cluster to cleanly disconnect the downstream clusters from Rancher.

Prepare New Nodes

1. Prepare three new nodes for the new cluster. These can be the same size or larger than the existing Rancher server nodes.
2. Choose one of these nodes to be the initial "target node" for the restore. We will bring this node up first and then add the other two once the cluster is online.

Configure RKE

1. Make a backup copy of the RKE files you used to build the original cluster. Store these in a safe place until the new cluster is online.
2. Edit cluster.yml and make the following changes:
   - Remove or comment out the entire addons section. The information about the Rancher deployment is already in etcd.
   - Change the nodes section to point to the new nodes
   - Comment out all but the chosen target node.

Restore the Database

How you perform the initial restore of the database depends on if the data is stored locally or available on S3.

Snapshot Stored Locally

1. Place the snapshot into /opt/rke/etcd-snapshots on the target node
2. Restore the snapshot with rke etcd snapshot-restore, passing it the name of the snapshot and pointing to the cluster.yml file

Snapshot Stored on S3

1. Restore the snapshot with rke etcd snapshot-restore, passing it the parameters needed to access S3.

Bring Up the Cluster

Bring up the cluster on the target node by running rke up, pointing to the cluster config file.

When the cluster is ready, RKE will write a credentials file to the local directory. Configure kubectl to use this file and then check on the status of the cluster. Wait for the target node to change to Ready. The three old nodes will be in a NotReady state.

Complete the Transition to the New Cluster

1. When the target node is Ready, remove the old nodes with kubectl delete node.
2. Reboot the target node to ensure cluster networking and services are in a clean state
3. Wait until all pods in kube-system, ingress-nginx, and the rancher pod in cattle-system return to a Running state

- The cattle-cluster-agent and cattle-node-agent pods will be in an Error or CrashLoopBackOff state until the Rancher server is up and DNS has been pointed to the new cluster.

Add the New Nodes

Skip this step if you're restoring a single-node cluster.

1. Edit cluster.yml and uncomment the additional nodes
2. Run rke up to add the new nodes to the cluster
3. Wait for all nodes to show Ready in the output of kubectl get nodes

Reconfigure Inbound Access

Once the cluster is up and all three nodes are Ready, complete any final DNS or load balancer change necessary to point the external URL to the new cluster. This might be a DNS change to point to a new load balancer, or it might mean that you need to configure the existing load balancer to point to the new nodes.

After making this change the agents on the downstream clusters will automatically reconnect. Because of backoff timers on the clusters, they may take up to 15 minutes to reconnect.

Finishing Up

Congratulations! You've successfully restored your Rancher environment from a backup. To avoid any future confusion, we recommend that you do some housekeeping to close out the process.

1. Securely store the new cluster.yml, kube_config_cluster.yml and cluster.rkestate files for future use.

1. Delete the archived configuration files from the old cluster.
2. Delete the nodes from the old cluster or clean them of all Kubernetes and Rancher configuration.

References

Restoring a Backup - https://rancher.com/docs/rancher/v2.x/en/backups/restorations/ha-restoration/

Cleaning Nodes - https://rancher.com/docs/rancher/v2.x/en/cluster-admin/cleaning-cluster-nodes/