Implementation Steps for Deploying and Configuring MicroK8s Clusters

# Implementation Steps to Deploy and Configure Non-HA Cluster for Development

1. For a non-HA cluster, we need two instances: 1 master node (example: microk8sm01.corp.in1bank.com.au) and 1 worker node (example: microk8sw01.corp.in1bank.com.au).

2. Create EC2 instances with the workflow "WF - 1 - Deploy Host - Full Workflow - ubuntu (develop)".

3. Once the EC2 instances are provisioned, at this step please check the "dev02\_microk8s\_master.yml" variables and change the value to MicroK8s\_enable\_HA: false because we will not configure HA here for master nodes.

4. We will run the "microk8s-install and configure(develop)" template from awxdev01 to install MicroK8s and configure the master and worker node setup.

5. Once the template runs successfully, we can log in to the master node (microk8sm01.corp.in1bank.com.au) using admin credentials to check the status of MicroK8s (sudo microk8s --wait-ready or sudo microk8s status).

6. From the master node, we can set up applications on the worker node because once the worker node is joined to the master node, we can run MicroK8s commands only from the master node.

# Implementation Steps to Deploy and Configure HA Cluster for Production

1. For an HA cluster, we need a minimum of 3 master nodes (example: microk8sm01.corp.in1bank.com.au, microk8sm02.corp.in1bank.com.au, microk8sm03.corp.in1bank.com.au) and 1 worker node (example: microk8sw01.corp.in1bank.com.au).

2. Create EC2 instances with the workflow "WF - 1 - Deploy Host - Full Workflow (master) - production".

3. Once the EC2 instances are provisioned, at this step please check the "prod02\_microk8s\_master.yml" variables and change the value to MicroK8s\_enable\_HA: true because we will configure HA here for master nodes, meaning even if 1 master node goes down, HA is still available for master nodes, so in this case, we need to deploy the 4th node as a standby node.

4. We will run the "microk8s-install and configure(Production)" template from awx01 to install MicroK8s and configure the master and worker node setup.

5. Once the template runs successfully, we can log in to any of the master nodes using admin credentials to check the status of MicroK8s (sudo microk8s --wait-ready or sudo microk8s status).

6. From the master node, we can set up applications on the worker node because once the worker node is joined to the master node, we can run MicroK8s commands only from the master node.

## Add Master Node Process for Production

1. Specify New Master Node Details: Add the details of the new master node to the production inventory file (e.g., inv\_prd\_build.yml).

2. Create EC2 Instances: Use the workflow "WF - 1 - Deploy Host - Full Workflow (master) - production" to create the new EC2 instance.

3. Install and Configure MicroK8s: Run the "microk8s-install and configure(Production)" template from awx01 to install MicroK8s on the new master node. This node will join the existing HA cluster.

4. Verify Setup: Once the template runs successfully, log in to any of the master nodes using admin credentials. Check the MicroK8s status with: sudo microk8s --wait-ready or sudo microk8s status. Ensure the newly added node shows up in the HA cluster.

## Add Master Node Process for Development

1. Redeploy the Environment: Since the dev environment typically has only one master node, redeploy the environment by removing the existing node and adding a new one.

2. Remove Existing Master Node: Run the "MicroK8s-Remove Node from Cluster (develop)" workflow to remove the current master node. This will also terminate the instance from the infrastructure.

3. Recreate the EC2 Instance: After removing the node, recreate the EC2 instance using "WF - 1 - Deploy Host - Full Workflow - ubuntu (develop)".

4. Install and Configure MicroK8s: Run the "microk8s-install and configure(develop)" template from awxdev01 to install MicroK8s on the new master node. A new worker node will join the master node with a new token.

5. Verify Setup: Once the template runs successfully, log in to the new master node (microk8sm01.corp.in1bank.com.au). Check the MicroK8s status with: sudo microk8s --wait-ready or sudo microk8s status.

## Replacing the Master Node for Production

1. Prepare for Replacement: In the production environment, ensure you have at least three master nodes. If any master node is inactive, remove it so that a new node can join from standby.

2. Remove the Existing Master Node: Run the "MicroK8s-Remove Node from Cluster (develop)" workflow to remove the inactive master node from the cluster. This will also terminate the instance from the infrastructure.

3. Recreate the EC2 Instance: After removing the node, recreate the EC2 instance using "WF - 1 - Deploy Host - Full Workflow (master) - production".

4. Install and Configure MicroK8s: Run the "microk8s-install and configure(Production)" template from awx01 to install MicroK8s on the new master node. This node will join the existing HA cluster.

5. Verify Setup: Once the template runs successfully, log in to any master node using admin credentials. Check the MicroK8s status with: sudo microk8s --wait-ready or sudo microk8s status.