The Rancher Terraform Provider allows administrators to create and manage RKE2 guest clusters using Terraform.

Deployment

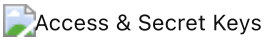
Prerequisites

- The Kubernetes cluster is built on top of Harvester VMs.
- The Harvester VMs that run as guest Kubernetes nodes are in the same namespace.

Deploy Guest Clusters Using the Rancher Terraform Provider

1. Create an API key.

   On the Rancher UI, go to **Account & API Keys** > **Create API key** > **Create**.

    Create API Key  Access & Secret Keys

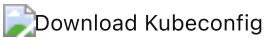
2. Obtain the Harvester cluster ID.

   On the Rancher UI, go to **Virtualization Management** > **Manage** > **Related Resources** > **Mgmt Cluster Name**.

    Harvester Cluster ID

3. Obtain the kubeconfig for the Harvester Cloud Provider and the Harvester CSI Driver.

   On the Rancher UI, go to **Virtualization Management**. Locate the target Harvester cluster in the list and then select ⋮ > **Download KubeConfig**.

    Download Kubeconfig

   ```
   # Generate harvester cloud provider kubeconfig
   RANCHER_SERVER_URL="<RANCHER_SERVER_URL>" # Pure server URL like
   https://192.168.0.181:6443
   RANCHER_ACCESS_KEY="<RANCHER_ACCESS_KEY>"
   RANCHER_SECRET_KEY="<RANCHER_SECRET_KEY>"
   HARVESTER_CLUSTER_ID="<HARVESTER_CLUSTER_ID>"
   CLUSTER_NAME="rke2-demo"
   curl -k -X POST
   ${RANCHER_SERVER_URL}/k8s/clusters/${HARVESTER_CLUSTER_ID}/v1/harvester/kubeconf
   \
   -H 'Content-Type: application/json' \
   -u ${RANCHER_ACCESS_KEY}:${RANCHER_SECRET_KEY} \
   -d '{"clusterRoleName": "harvesterhci.io:cloudprovider", "namespace":
   "default", "serviceAccountName": "'${CLUSTER_NAME}'"}' | xargs | sed
   's/\\n/\n/g' > ${CLUSTER_NAME}-kubeconfig
   ```

4. Prepare a `provider.tf` file with the following content:

```
terraform {
required_providers {
    rancher2 = {
        source  = "rancher/rancher2"
        version = "4.2.0"
        }
    }
}

# Configure the Rancher2 provider to admin
provider "rancher2" {
    api_url    = "<api_url>" # API Endpoint on Account & API Keys page
    access_key = "<access_key>"
    secret_key = "<secret_key>"
    insecure   = true # Set to true if the Rancher server uses a self-signed
certificate
}
```

5. Prepare a `main.tf` file with the following content:

```
# Get imported harvester cluster info
data "rancher2_cluster_v2" "harv" {
    name = "<harvester_cluster_name_in_rancher>"
}

# Create a new Cloud Credential for an imported Harvester cluster
resource "rancher2_cloud_credential" "harv-cred" {
    name = "harv-cred"
    harvester_credential_config {
        cluster_id = data.rancher2_cluster_v2.harv.cluster_v1_id
        cluster_type = "imported"
        kubeconfig_content = data.rancher2_cluster_v2.harv.kube_config
    }
}

# Create a new rancher2 machine config v2 using harvester node_driver
resource "rancher2_machine_config_v2" "rke2-machine" {
    generate_name = "rke2-machine"
    harvester_config {
        vm_namespace = "default"
        cpu_count = "2"
        memory_size = "4"
        disk_info = <<EOF
        {
            "disks": [{
                "imageName": "default/<vmimage-name>",
                "size": 15,
                "bootOrder": 1
            }]
        }
        EOF
```

```
        network_info = <<EOF
        {
            "interfaces": [{
                "networkName": "default/<network-name>"
            }]
        }
        EOF
        ssh_user = "<ssh_user>"
        user_data = <<EOF
        package_update: true
        packages:
        - qemu-guest-agent
        - iptables
        runcmd:
        - - systemctl
            - enable
            - '--now'
            - qemu-guest-agent.service
        EOF
    }
}

resource "rancher2_cluster_v2" "rke2-demo" {
    name = "rke2-demo"
    kubernetes_version = "v1.28.10+rke2r1"
    rke_config {
        machine_pools {
            name = "pool1"
            cloud_credential_secret_name = rancher2_cloud_credential.harv-
cred.id
            control_plane_role = true
            etcd_role = true
            worker_role = true
            quantity = 1
            machine_config {
                kind = rancher2_machine_config_v2.rke2-machine.kind
                name = rancher2_machine_config_v2.rke2-machine.name
            }
        }

        machine_selector_config {
            config = yamlencode({
                cloud-provider-config = file("${path.module}/rke2-demo-
kubeconfig")
                cloud-provider-name = "harvester"
            })
        }

        machine_global_config = <<EOF
        cni: "calico"
        disable-kube-proxy: false
        etcd-expose-metrics: false
```

```
        EOF

        upgrade_strategy {
            control_plane_concurrency = "1"
            worker_concurrency = "1"
        }

        etcd {
            snapshot_schedule_cron = "0 */5 * * *"
            snapshot_retention = 5
        }

        chart_values = <<EOF
        harvester-cloud-provider:
        clusterName: rke2-demo
        cloudConfigPath: /var/lib/rancher/rke2/etc/config-files/cloud-
provider-config
        EOF
    }
}
```

6. Run `terraform init`.
7. Run `terraform apply`.