Lab 14: Initial Deployment of CockroachDB with Terraform

Terraform is an infrastructure-as-code provisioning tool that uses configuration files to define application and network resources. You can provision CockroachDB Cloud clusters and cluster resources by using the [CockroachDB Cloud Terraform provider] in your Terraform configuration files.

This lab shows you how to provision a CockroachDB Cloud cluster using the CockroachDB Cloud Terraform provider.

CockroachDB Serverless

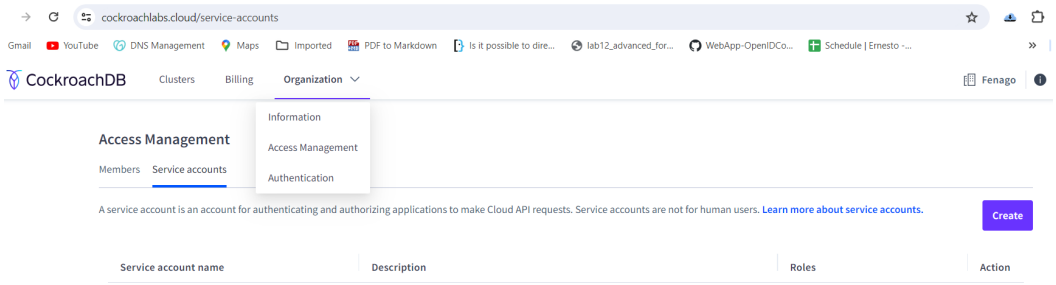
Before you begin

Before you start this lab, you must

1. Install Terraform.
2. Create a Free CockroachDB Account: https://www.cockroachlabs.com/

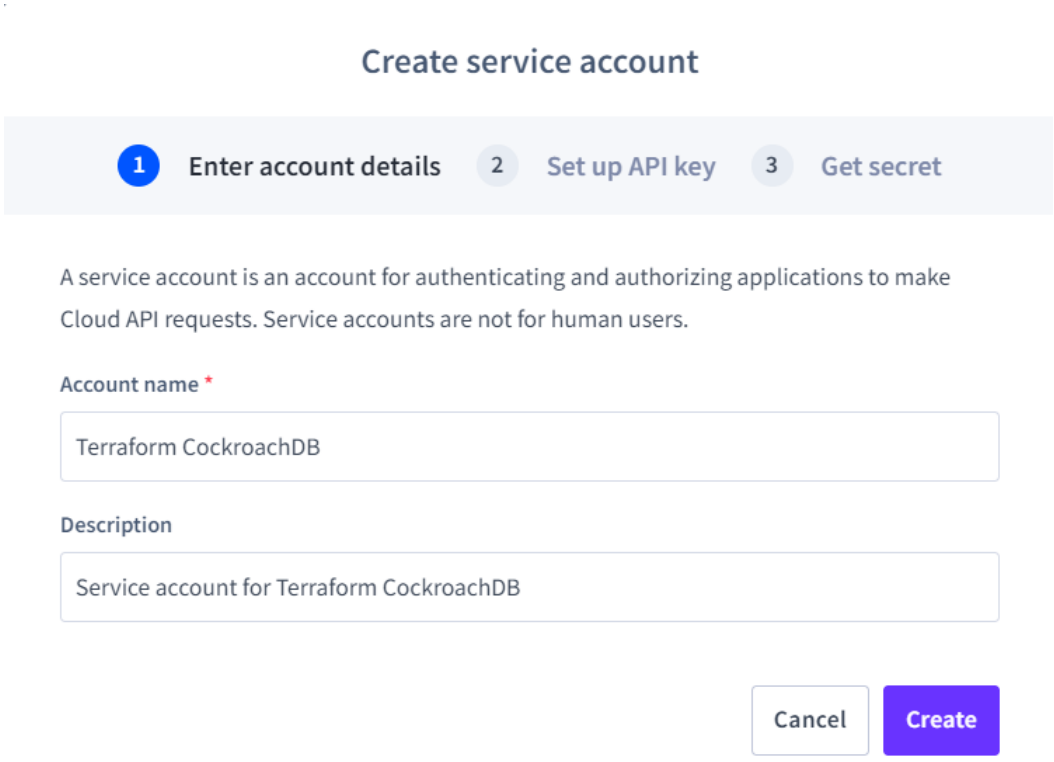
Create a service account

1. On the Access Management page, select the Service Accounts tab.

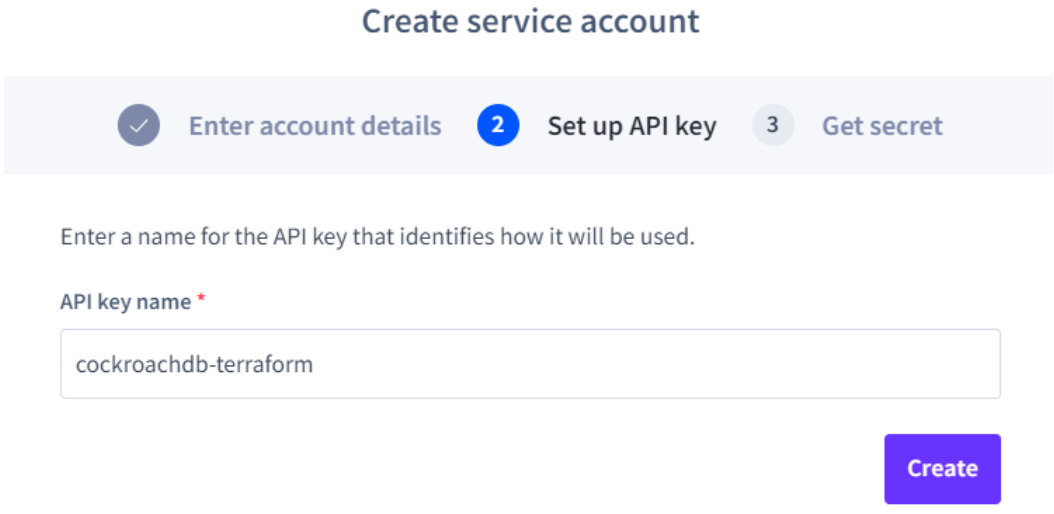


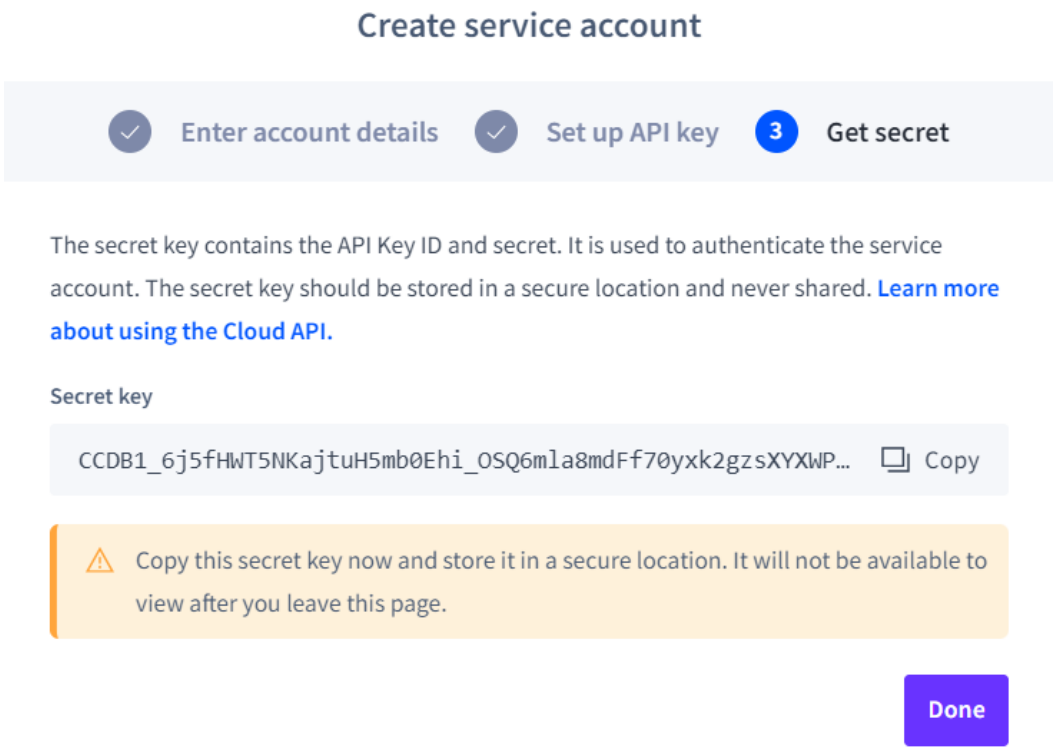
2. Click Create.

3. Enter a **Account name** and **Description**.



4. Create and export an **API** key.

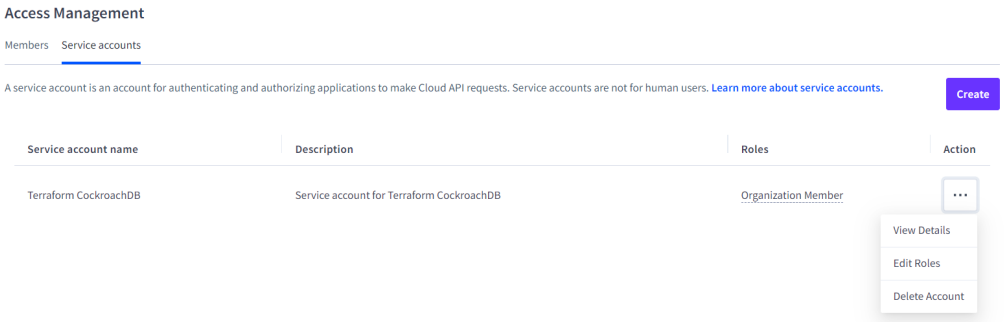




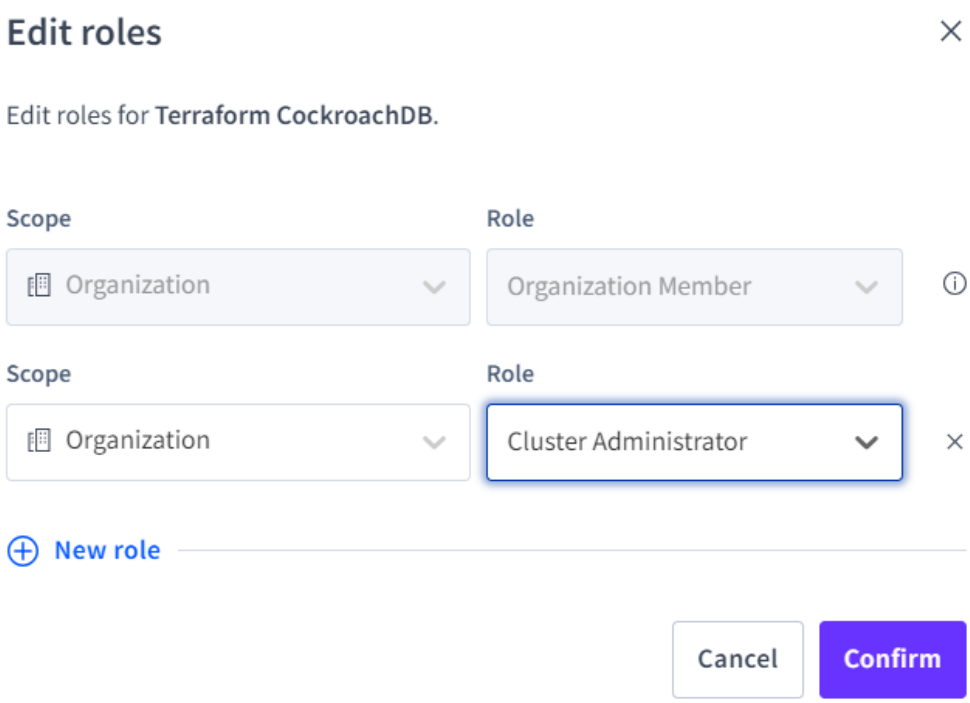
5. Confirm creation of the service account.

Edit roles on a service account

1. On the Access Management page, select the Service Accounts tab.
2. In the row for the target service account, click, click the three-dots **Action** button and select **Edit Roles**.



3. Add the new role Cluster Administrator and click `Confirm`.



A number of fine-grained roles can be assigned to a given service account. These are the same roles that can be assigned to users. Each role is represented by a row. Each row has a scope, which is either Organization or the name of a particular cluster. If the role is Cluster Administrator, Cluster Operator, or Cluster Developer, assigning it at the organization scope means that it applies to all clusters in the organization.

Create the Terraform configuration files

Terraform uses a infrastructure-as-code approach to managing resources. Terraform configuration files allow you to define resources declaratively and let Terraform manage their lifecycle.

In this lab, you will create a CockroachDB Serverless cluster.

1. In a terminal create a new directory and use `wget` to download the CockroachDB Serverless `main.tf` example file:

   ```
   wget https://raw.githubusercontent.com/cockroachdb/terraform-provider-cockroach/main/examples/workflows/cockroach_serverless_cluster/main.tf
   ```

2. In a text editor create a new file `terraform.tfvars` with the following settings:

   ```
   cluster_name = "{cluster name}"
   sql_user_name = "{SQL user name}"
   sql_user_password = "{SQL user password}"
   ```

   Where:

   - `{cluster name}` is the name of the cluster you want to create.

- `{SQL user name}` is the name of the SQL user you want to create.
- `{SQL user password}` is the password for the SQL user you want to create.

  For example, the following `terraform.tfvars` file creates a CockroachDB Serverless with a `maxroach` SQL user.

  ```
  cluster_name = "blue-dog"
  sql_user_name = "maxroach"
  sql_user_password = "Fenago@12345"
  ```

3. Create an environment variable named `COCKROACH_API_KEY`. Copy the `API key` from the CockroachDB Cloud console and create the `COCKROACH_API_KEY` environment variable:

   ```
   export COCKROACH_API_KEY={API key}
   ```

   Where `{API key}` is the API key you copied from the CockroachDB Cloud Console.

Provision the cluster

1. Initialize the provider:

   ```
   terraform init -upgrade
   ```

   This reads the `main.tf` configuration file and uses the `terraform.tfvars` file for settings specific to your cluster. The `-upgrade` flag ensures you are using the latest version of the provider.

2. Create the Terraform plan. This shows the actions the provider will take, but won't perform them:

   ```
   terraform plan
   ```

3. Create the cluster:

   ```
   terraform apply
   ```

   Enter `yes` when prompted to apply the plan and create the cluster.

You will see output similar to the following:

```
Terraform used the selected providers to generate the following execution
plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# cockroach_cluster.example will be created
+ resource "cockroach_cluster" "example" {
    + account_id        = (known after apply)
    + cloud_provider    = "GCP"
    + cockroach_version = (known after apply)
    + creator_id        = (known after apply)
    + id                = (known after apply)
```

```
    + name              = "blue-dog"
    + operation_status  = (known after apply)
    + plan              = (known after apply)
    + regions           = [
        + {
            + name       = "us-central1"
            + node_count = (known after apply)
            + sql_dns    = (known after apply)
            + ui_dns     = (known after apply)
            },
        ]
    + serverless        = {
        + routing_id  = (known after apply)
        + spend_limit = 0
        }
    + state             = (known after apply)
    }

# cockroach_sql_user.example will be created
+ resource "cockroach_sql_user" "example" {
    + cluster_id = (known after apply)
    + id         = (known after apply)
    + name       = "maxroach"
    + password   = (sensitive value)
    }

Plan: 2 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?
Terraform will perform the actions described above.
Only 'yes' will be accepted to approve.

Enter a value: yes

cockroach_cluster.example: Creating...
cockroach_cluster.example: Creation complete after 5s [id=1aaae1f8-19e2-4653-ba62-
db16de2a84b9]
cockroach_sql_user.example: Creating...
cockroach_sql_user.example: Creation complete after 2s [id=1aaae1f8-19e2-4653-ba62-
db16de2a84b9:maxroach]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.
```

Get information about your cluster

The `terraform show` command shows detailed information of your cluster resources.

```
terraform show
```

This will show the following output:

```
# cockroach_cluster.example:
resource "cockroach_cluster" "example" {
    cloud_provider    = "GCP"
    cockroach_version = "v22.1"
    creator_id        = "98e75f0a-072b-44dc-95d2-cc36cd425cab"
    id                = "1aaae1f8-19e2-4653-ba62-db16de2a84b9"
    name              = "blue-dog"
    operation_status  = "CLUSTER_STATUS_UNSPECIFIED"
    plan              = "SERVERLESS"
    regions           = [
        # (1 unchanged element hidden)
    ]
    serverless        = {
        routing_id  = "blue-dog-6821"
        spend_limit = 0
    }
    state             = "CREATED"
}

# cockroach_sql_user.example:
resource "cockroach_sql_user" "example" {
    cluster_id = "1aaae1f8-19e2-4653-ba62-db16de2a84b9"
    id         = "1aaae1f8-19e2-4653-ba62-db16de2a84b9:maxroach"
    name       = "maxroach"
    password   = (sensitive value)
}
```

Go to CockroachDB Console and confirm cluster has been created. Also, `COCKROACH_API_KEY` will be required in Lab 15 as well.