Export your Google Cloud resources into Terraform format

Preview

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You've deployed resources in Google Cloud, and now need to manage your infrastructure as code (IaC) with Terraform. Google provides a tool that you can use to generate Terraform code for resources in a project, folder, or organization.

Before you begin

- Install the command-line interface (CLI) for Config Connector.

  ```
  gcloud components install config-connector
  ```

  Config Connector lets you use Google Cloud's Terraform bulk-export tool.

- Enable the Cloud Asset API.

  ```
  gcloud services enable cloudasset.googleapis.com
  ```

- Make sure that the Cloud Asset Service Agent (/iam/docs/service-agents) **`gcp-sa-cloudasset.iam.gserviceaccount.com`** has the **`roles/servicenetworking.serviceAgent`** role.

  ```
  gcloud projects add-iam-policy-binding zeta-cortex-294608 \
    --member=serviceAccount:service-PROJECT_NUMBER@gcp-sa-cloudasset.iam
    --role=roles/servicenetworking.serviceAgent
  ```

To get your project ID and project number, go to the Google Cloud console (https://console.cloud.google.com/home/dashboard).

Limitations

Some resource types aren't supported for export to Terraform format even though they are supported by the Terraform Google provider. For a list of resource types that are supported for export to Terraform format, run the `gcloud beta resource-config list-resource-types` (/sdk/gcloud/reference/beta/resource-config/list-resource-types) command.

Export the entire project configuration to Terraform HCL coc

The `gcloud beta resource-config bulk-export --resource-format=terraform` (/sdk/gcloud/reference/beta/resource-config/bulk-export) command exports resources currently configured in the project, folder, or organization and prints them to the screen in HCL code format (https://www.terraform.io/language/configuration-0-11/syntax).

```
gcloud beta resource-config bulk-export \
  --project=zeta-cortex-294608 \
  --resource-format=terraform
```

Write the output to a directory structure

Output the project's entire configuration to a path:

```
gcloud beta resource-config bulk-export \
  --path=. \
  --project=zeta-cortex-294608 \
  --resource-format=terraform
```

The `--path` flag specifies the location to output the HCL code. If the path *`OUTPUT_DIRECTORY_NAME`* doesn't exist, a prompt asks you if you want to create it.

After running the command, the HCL code for each resource is output to a separate `.tf` file in the following directory structure:

```
./projects/zeta-cortex-294608/RESOURCE_TYPE
```

Write the output to a single file

If you don't want to print the output to the screen or create separate `.tf` files, you can write all of the output to a single file, as shown in this example:

```
gcloud beta resource-config bulk-export --resource-format=terraform >> gcp_res
```

Filter the output

Filter the output of the bulk export command by specifying resource types.

List the supported resource types to filter on

For a list of resource types that are supported for export to Terraform format, run the **gcloud beta resource-config list-resource-types** (/sdk/gcloud/reference/beta/resource-config/list-resource-types) command:

```
gcloud beta resource-config list-resource-types
```

Optionally, write the output to a file:

```
gcloud beta resource-config list-resource-types >> strings.txt
```

In the output, the resource type for Compute Engine VMs is listed as:

```
KRM KIND: ComputeInstance
```

You can ignore the **`KRM KIND:`** prefix.

Export a single resource type

Use a string, such as **ComputeInstance**, to export specific resource types for your project in HCL code format:

```
gcloud beta resource-config bulk-export \
  --resource-types=RESOURCE_TYPE \
  --project=zeta-cortex-294608 \
  --resource-format=terraform
```

The **--resource-types** flag specifies the resource type to output.

Export multiple resource types

Export VM instances and firewall rules in HCL code format:

```
gcloud beta resource-config bulk-export \
  --resource-types=ComputeFirewall,ComputeInstance \
  --project=zeta-cortex-294608 \
  --resource-format=terraform
```

Use a file to specify the resource types to export

1. Create a directory called **tf-output**.

   ```
   cd && mkdir tf-output && cd tf-output
   ```

2. Create a file called **types.txt**, and add a list of resource types. For example:

   ```
   ComputeBackendBucket
   ComputeBackendService
   ComputeForwardingRule
   ```

3. Run the **gcloud beta resource-config bulk-export** command with the **--resource-types-file** flag:

```
gcloud beta resource-config bulk-export \
 --resource-types-file=types.txt \
 --path=tf-output \
 --project=zeta-cortex-294608 \
 --resource-format=terraform
```

If the project doesn't contain any of a particular resource type, the command succeeds but nothing is output for that resource type.

Troubleshooting

If you see the following error:

"Permission denied during export. Please ensure the Cloud Asset Inventory API is enabled."

Make sure that you have followed the instructions in the Before you begin (#before-you-begin) section.

Next steps

- Import your Google Cloud resources into Terraform state (/docs/terraform/resource-management/import).

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