

# Refine — GCP Setup Guide

**Maturity note (v2.28.x):** GCP support — inventory sync, cost estimation (Compute Engine, Persistent Disks, Cloud Storage, Cloud SQL), and rightsizing recommendations — is **built but not yet verified against a live GCP project**. The code paths mirror the production-validated AWS and Azure flows, but treat GCP numbers as preliminary until we've confirmed them against a real billing export. AWS and Azure are production-validated.

Onboard a GCP project to Refine for cost-optimization recommendations.

This is the per-project equivalent of `aws-setup.yaml` (AWS) and `refine-onboarding.bicep` (Azure). The Terraform module creates the resources Refine needs to read cost and inventory data from your GCP project. Refine reads straight from your GCS bucket and BigQuery dataset — Blacktip never sees the data.

## What gets deployed

Resource	Purpose
Service Account: <code>refine-cost-reader@&lt;project&gt;.iam.gserviceaccount.com</code>	Identity Refine authenticates as
IAM bindings	<code>roles/viewer</code> , <code>roles/billing.viewer</code> , <code>roles/cloudasset.viewer</code> , <code>roles/monitoring.viewer</code> , <code>roles/bigquery.dataViewer</code> , <code>roles/bigquery.jobUser</code>
GCS Bucket	Nightly cost data drops (analog to AWS S3 bucket)
BigQuery Dataset	Destination for Cloud Billing Export (detailed usage)
Service Account Key (JSON)	Refine's credential to call the GCP APIs

## Network requirements

Refine's host must reach Google's APIs over the public internet:

- `accounts.google.com` + `oauth2.googleapis.com` (auth)
- `googleapis.com` (Cloud Asset Inventory, BigQuery, Monitoring, Compute, etc.)
- `storage.googleapis.com` (GCS reads)

No private-link alternative for cost data — **air-gapped deployments cannot use GCP cost monitoring** today.

## Step 1 — Deploy the Terraform module

```
cd infra/gcp
terraform init
terraform apply \
  -var="project_id=<your-project>" \
  -var="region=us-central1" \
  -var="customer_email=ops@yourco.com"
```

Wait for `Apply complete!`. Save the outputs.

## Step 2 — Download the Service Account key

```
terraform output -raw service_account_key_json > refine-gcp-key.json
chmod 600 refine-gcp-key.json
```

⚠ This file contains a private key. Treat like a password — store in your secrets manager, not in source control.

## Step 3 — Enable Cloud Billing Export to BigQuery

Terraform cannot configure Cloud Billing Export today (it requires a billing-account admin), so do this manually:

1. Open <https://console.cloud.google.com/billing/export>
2. Select your billing account → **BIGQUERY EXPORT** tab
3. Click **EDIT SETTINGS** under **Detailed usage cost**
4. Destination:
  - **Project:** the project you ran Terraform against
  - **Dataset:** `refine_billing_export` (created by the Terraform module)
5. Save

Detailed usage data will start populating within 24 hours.

## Step 4 — Paste credentials into Refine

In Refine, choose **Add Cloud Account** → **GCP**:

Field	Value
Project ID	<code>&lt;your-project&gt;</code>
Service Account Email	from <code>terraform output service_account_email</code>
Service Account Key (JSON)	paste contents of <code>refine-gcp-key.json</code>
Cost Data Bucket	from <code>terraform output cost_data_bucket</code>
Billing Dataset	<code>refine_billing_export</code>

Click **Validate**. Refine probes Cloud Resource Manager + BigQuery, then schedules a nightly sync.

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## Day-2 hardening (recommended)

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Service Account keys don't expire by default. Rotate them every 90 days:

```
# Inside the Terraform workspace
terraform taint google_service_account_key.refine_reader_key
terraform apply
terraform output -raw service_account_key_json > refine-gcp-key-new.json
```

Update Refine with the new key, confirm sync still works, then delete the old key from IAM.

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## Supported GCP resources (Phase 4 MVP)

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Refine generates recommendations for:

- **Compute Engine VMs** (rightsizing + idle detection)
- **Persistent Disks** (orphaned + over-provisioned downgrade)
- **Cloud Storage buckets** (lifecycle policy)
- **Cloud SQL** (rightsizing + reserved capacity)
- **Cloud Functions** (memory tuning)

Deferred to v2.25+: GKE workload rightsizing, BigQuery slot optimization, Committed Use Discount analysis.

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## Troubleshooting

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Problem	Fix
"Authentication failed" on validate	Re-check the Service Account JSON is intact (it should start with <code>{"type": "service_account",</code> ). Rotate if in doubt.
BigQuery says "no detailed cost data"	Cloud Billing Export takes ~24h for first detailed-usage drop. Check Step 3 was completed.
Recommendations show only inventory, no cost	Confirm BigQuery dataset exists and the Service Account has <code>bigquery.dataViewer</code> on it.

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## Need help?

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Email [support@blacktipsolutions.com](mailto:support@blacktipsolutions.com).

