

Dataproц: Qwik Start - Command Line

GSP104



- Dataproц provides a fully managed cloud service for running Apache Spark and Hadoop clusters quickly and cost-efficiently.
- Operations that once took hours or days now complete in seconds or minutes with automatic cluster scaling.
- This lab demonstrates creating a Dataproц cluster entirely through command line interface.
- You'll execute a simple Apache Spark job directly within the provisioned cluster environment.
- Finally, resize the cluster by modifying the number of worker nodes dynamically.

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⚠️ Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. [Learn more.](#)

Open Google Cloud console

Username

student-02-77569a450c62i

📄

Password

1gd108qixhdc

📄

Project ID

qwiklabs-gcp-03-9a34201i

📄

Student Resources

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gcloud is the command-line tool for Google Cloud. It comes pre-installed on Cloud Shell and supports tab-completion.

3. (Optional) You can list the active account name with this command:

gcloud auth list

4. Click **Authorize**.

Output:

ACTIVE: *
ACCOUNT: student-02-77569a450c62@qwiklabs.net

To set the active account, run:
\$ gcloud config set account `ACCOUNT`

5. (Optional) You can list the project ID with this command:

gcloud config list project

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📘 Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. [Learn more](#) Don't show again Dismiss

Welcome to Cloud Shell! Type "help" to get started, or type "gemini" to try prompting with Gemini CLI.
Your Cloud Platform project in this session is set to **qwiklabs-gcp-03-9a342013a3da**.
Use ``gcloud config set project [PROJECT_ID]`` to change to a different project.
student_02_77569a450c62@cloudshell:~ (**qwiklabs-gcp-03-9a342013a3da**)\$ `gcloud auth list`
Credentialed Accounts

ACTIVE: *
ACCOUNT: student-02-77569a450c62@qwiklabs.net

To set the active account, run:
\$ `gcloud config set account `ACCOUNT``

student_02_77569a450c62@cloudshell:~ (**qwiklabs-gcp-03-9a342013a3da**)\$ `gcloud config list project`
[core]
project = qwiklabs-gcp-03-9a342013a3da

Your active configuration is: [cloudshell-22103]
student_02_77569a450c62@cloudshell:~ (**qwiklabs-gcp-03-9a342013a3da**)\$

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Open Google Cloud console

Username

student-02-77569a450c62i

Password

1gd108qixhdc

Project ID

qwiklabs-gcp-03-9a34201i

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Task 1. Create a cluster

1. In Cloud Shell, run the following command to set the Region:

gcloud config set dataproc/region us-east1

2. Disable the Dataproc API:

gcloud services disable dataproc.googleapis.com --force

3. Re-enable the Dataproc API:

gcloud services enable dataproc.googleapis.com

4. Dataproc creates staging and temp buckets that are shared among clusters in the same region. Since we're not specifying an account for Dataproc to use, it will use the Compute Engine default service account, which doesn't have storage bucket permissions by default. Let's add those

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```
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $ gcloud config set dataproc/region us-east1
Updated property [dataproc/region].
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $ gcloud services disable dataproc.googleapis.com --force
Operation "operations/acat.p17-1019275457196-1acb3562-08be-462e-820c-896cedff2ald" finished successfully.
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $ gcloud services enable dataproc.googleapis.com
Operation "operations/acf.p2-1019275457196-0f855cad-2a40-453c-b435-3e9cc08e6ae0" finished successfully.
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $
```

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Open Google Cloud console

Username

student-02-77569a450c62i

Password

1gd108qixhdc

Project ID

qwiklabs-gcp-03-9a34201i

Student Resources

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4. Dataproc creates staging and temp buckets that are shared among clusters in the same region. Since we're not specifying an account for Dataproc to use, it will use the Compute Engine default service account, which doesn't have storage bucket permissions by default. Let's add those.

- First, run the following commands to grab the PROJECT_ID and PROJECT_NUMBER:

```
PROJECT_ID=$(gcloud config get-value project) && \ngcloud config set project $PROJECT_ID
```

```
PROJECT_NUMBER=$(gcloud projects describe $PROJECT_ID --format='value(projectNumber)')
```

- Now run the following command to give the Storage Admin and Dataproc Worker role to the Compute Engine default service account:

```
gcloud projects add-iam-policy-binding $PROJECT_ID \n  --member=serviceAccount:$PROJECT_NUMBER-compute@developer.gserviceaccount.com \n  --role=roles/storage.admin
```

```
gcloud projects add-iam-policy-binding $PROJECT_ID \n
```

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```
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $ PROJECT_ID=$(gcloud config get-value project) && \
gcloud config set project $PROJECT_ID

PROJECT_NUMBER=$(gcloud projects describe $PROJECT_ID --format='value(projectNumber) ')
Your active configuration is: [cloudshell-22103]
Updated property [core/project].
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $ gcloud projects add-iam-policy-binding $PROJECT_ID \
--member=serviceAccount:$PROJECT_NUMBER-compute@developer.gserviceaccount.com \
--role=roles/storage.admin

gcloud projects add-iam-policy-binding $PROJECT_ID \
--member=serviceAccount:$PROJECT_NUMBER-compute@developer.gserviceaccount.com \
--role=roles/dataproc.worker
Updated IAM policy for project [qwiklabs-gcp-03-9a342013a3da].
bindings:
- members:
  - serviceAccount:qwiklabs-gcp-03-9a342013a3da@qwiklabs-gcp-03-9a342013a3da.iam.gserviceaccount.com
  role: roles/bigquery.admin
- members:
  - serviceAccount:1019275457196@cloudbuild.gserviceaccount.com
  role: roles/cloudbuild.builds.builder
- members:
  - serviceAccount:service-1019275457196@gcp-sa-cloudbuild.iam.gserviceaccount.com
  role: roles/cloudbuild.serviceAgent
- members:
  - serviceAccount:service-1019275457196@compute-system.iam.gserviceaccount.com
  role: roles/compute.serviceAgent
- members:
```

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```
role: roles/cloudbuild.serviceAgent
- members:
  - serviceAccount:service-1019275457196@compute-system.iam.gserviceaccount.com
role: roles/compute.serviceAgent
- members:
  - serviceAccount:service-1019275457196@dataproc-accounts.iam.gserviceaccount.com
role: roles/dataproc.serviceAgent
- members:
  - serviceAccount:1019275457196-compute@developer.gserviceaccount.com
role: roles/dataproc.worker
- members:
  - serviceAccount:1019275457196-compute@developer.gserviceaccount.com
  - serviceAccount:1019275457196@cloudservices.gserviceaccount.com
role: roles/editor
- members:
  - serviceAccount:admiral@qwiklabs-services-prod.iam.gserviceaccount.com
  - serviceAccount:qwiklabs-gcp-03-9a342013a3da@qwiklabs-gcp-03-9a342013a3da.iam.gserviceaccount.com
  - user:student-02-77569a450c62@qwiklabs.net
role: roles/owner
- members:
  - serviceAccount:1019275457196-compute@developer.gserviceaccount.com
  - serviceAccount:qwiklabs-gcp-03-9a342013a3da@qwiklabs-gcp-03-9a342013a3da.iam.gserviceaccount.com
role: roles/storage.admin
- members:
  - user:student-02-77569a450c62@qwiklabs.net
role: roles/viewer
etag: BwZHALeX-00=
version: 1
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $
```

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Open Google Cloud console

Username

student-02-77569a450c62i

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Password

1gd108qixhdc

📄

Project ID

qwiklabs-gcp-03-9a34201i

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PROJECT_NUMBER=\$(gcloud projects describe \$PROJECT_ID --format='value(projectNumber)')

- Now run the following command to give the Storage Admin and Dataproc Worker role to the Compute Engine default service account:

gcloud projects add-iam-policy-binding \$PROJECT_ID \

--member=serviceAccount:\$PROJECT_NUMBER-compute@developer.gserviceaccount.com \

--role=roles/storage.admin

📄

gcloud projects add-iam-policy-binding \$PROJECT_ID \

--member=serviceAccount:\$PROJECT_NUMBER-compute@developer.gserviceaccount.com \

--role=roles/dataproc.worker

3. Enable Private Google Access on your subnetwork by running the following command:

gcloud compute networks subnets update default --region=us-east1

--enable-private-ip-gateway

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Open Google Cloud console

Username

student-02-77569a450c62i

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Password

1gd108qixhdc

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Project ID

qwiklabs-gcp-03-9a34201i

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compute@developer.gserviceaccount.com \

--role=roles/dataproc.worker

3. Enable Private Google Access on your subnetwork by running the following command:

gcloud compute networks subnets update default --region=us-east1 --enable-private-ip-google-access

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4. Run the following command to create a cluster called example-cluster with e2-standard-4 VMs and default Cloud Dataproc settings:

gcloud dataproc clusters create example-cluster --worker-boot-disk-size 500 --worker-machine-type=e2-standard-4 --master-machine-type=e2-standard-4

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5. If asked to confirm a zone for your cluster. Enter Y.

Your cluster will build for a couple of minutes.

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```
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da)$ gcloud compute networks subnets update default --region=us-east1 --enable-private-ip-google-access
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-9a342013a3da/regions/us-east1/subnetworks/default].
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da)$
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da)$ gcloud dataproc clusters create example-cluster --worker-boot-disk-size 500 --worker-machine-type=e2-standard-4 --master-machine-type=e2-standard-4
Waiting on operation [projects/qwiklabs-gcp-03-9a342013a3da/regions/us-east1/operations/090f61a0-af06-3a2b-a7cc-3651a0f9c504].
Waiting for cluster creation operation...
WARNING: For PD-Standard without local SSDs, we strongly recommend provisioning 1TB or larger to ensure consistently high I/O performance. See https://cloud.google.com/compute/docs/disks/performance for information on disk I/O performance.
WARNING: The firewall rules for specified network or subnetwork would allow ingress traffic from 0.0.0.0/0, which could be a security risk.
WARNING: No image specified. Using the default image version. It is recommended to select a specific image version in production, as the default image version may change at any time.
Waiting for cluster creation operation...done.
Created [https://dataproc.googleapis.com/v1/projects/qwiklabs-gcp-03-9a342013a3da/regions/us-east1/clusters/example-cluster] Cluster placed in zone [us-east1-c].
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da)$
```

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00:28:44

⌚ Time limit

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Open Google Cloud console

Username

student-02-77569a450c62i

📄

Password

1gd108qixhdc

📄

Project ID

qwiklabs-gcp-03-9a34201i

📄

Student Resources

📄 Dataproc: Qwik Start - Qwiklabs

Task 2. Submit a job

• Run this command to submit a sample Spark job that calculates a rough value for pi:

```
gcloud dataproc jobs submit spark --cluster example-cluster \
--class org.apache.spark.examples.SparkPi \
--jars file:///usr/lib/spark/examples/jars/spark-examples.jar
-- 1000
```

📄

The command specifies:

• That you want to run a [spark](#) job on the `example-cluster` cluster

• The `class` containing the main method for the job's pi-calculating application

• The location of the jar file containing your job's code

• The parameters you want to pass to the job—in this case, the number of tasks, which is `1000`

Note: Parameters passed to the job must follow a double dash (--). See the [gcloud documentation](#) for more information.

The job's running and final output is displayed in the terminal window:

Lab instructions and tasks

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📘 Open Editor

📘 Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. [Learn more](#)

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```
- serviceAccount:service-1019275457196@gcp-sa-cloudbuild.iam.gserviceaccount.com
role: roles/cloudbuild.serviceAgent
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $ gcloud dataproc jobs submit spark --cluster example-cluster \
--class org.apache.spark.examples.SparkPi \
--jars file:///usr/lib/spark/examples/jars/spark-examples.jar -- 1000
Job [7230837507b64798a2feaa535de063e7] submitted.
Waiting for job output...
25/12/28 10:45:01 INFO SparkEnv: Registering MapOutputTracker
25/12/28 10:45:01 INFO SparkEnv: Registering BlockManagerMaster
25/12/28 10:45:01 INFO SparkEnv: Registering BlockManagerMasterHeartbeat
25/12/28 10:45:01 INFO SparkEnv: Registering OutputCommitCoordinator
25/12/28 10:45:02 INFO MetricsConfig: Loaded properties from hadoop-metrics2.properties
25/12/28 10:45:02 INFO MetricsSystemImpl: Scheduled Metric snapshot period at 10 second(s).
25/12/28 10:45:02 INFO MetricsSystemImpl: google-hadoop-file-system metrics system started
25/12/28 10:45:02 INFO DataprocSparkPlugin: Registered 188 driver metrics
25/12/28 10:45:03 INFO DefaultNoHARMFailoverProxyProvider: Connecting to ResourceManager at example-cluster-m.us-east1-c.c.qwiklabs-gcp-03-9a342013a3da.internal./10.142.0.4:8032
25/12/28 10:45:03 INFO AHSPProxy: Connecting to Application History server at example-cluster-m.us-east1-c.c.qwiklabs-gcp-03-9a342013a3da.internal./10.142.0.4:10200
25/12/28 10:45:04 INFO Configuration: resource-types.xml not found
25/12/28 10:45:04 INFO ResourceUtils: Unable to find 'resource-types.xml'.
25/12/28 10:45:06 INFO YarnClientImpl: Submitted application application_1766918486251_0001
25/12/28 10:45:07 INFO DefaultNoHARMFailoverProxyProvider: Connecting to ResourceManager at example-cluster-m.us-east1-c.c.qwiklabs-gcp-03-9a342013a3da.internal./10.142.0.4:8030
25/12/28 10:45:09 INFO GoogleCloudStorageImpl: Ignoring exception of type GoogleJsonResponseException; verified object already exists with desired state.
25/12/28 10:45:10 INFO GoogleHadoopOutputStream: hflush(): No-op due to rate limit (RateLimiter[stableRate=0.2qps]): readers will *not* yet see flushed data for gs://dataproc-temp-us-east1-1019275457196-8ertei0p/3ef89636-2f20-4011-ac18-2c8259ea8458/spark-job-history/application_1766918486251_0001.inprogress [CONTEXT ratelimit_period="1 MINUTES" ]
Pi is roughly 3.141666871416669
```

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📘 Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. [Learn more](#) Don't show again Dismiss

```
placement:
  clusterName: example-cluster
  clusterUuid: 3ef89636-2f20-4011-ac18-2c8259ea8458
reference:
  jobId: 7230837507b64798a2feaa535de063e7
  projectId: qwiklabs-gcp-03-9a342013a3da
sparkJob:
  args:
  - '1000'
  jarFileUri:
  - file:///usr/lib/spark/examples/jars/spark-examples.jar
  mainClass: org.apache.spark.examples.SparkPi
status:
  state: DONE
  stateStartTime: '2025-12-28T10:45:32.456409Z'
statusHistory:
- state: PENDING
  stateStartTime: '2025-12-28T10:44:53.592055Z'
- state: SETUP_DONE
  stateStartTime: '2025-12-28T10:44:53.635936Z'
- details: Agent reported job success
  state: RUNNING
  stateStartTime: '2025-12-28T10:44:53.956122Z'
yarnApplications:
- name: Spark Pi
  progress: 1.0
  state: FINISHED
  trackingUrl: http://example-cluster-m.us-east1-c.c.qwiklabs-gcp-03-9a342013a3da.internal.:8088/proxy/application_1766918486251_0001/
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $
```

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```
placement:
  clusterName: example-cluster
  clusterUuid: 3ef89636-2f20-4011-ac18-2c8259ea8458
reference:
  jobId: 7230837507b64798a2feaa535de063e7
  projectId: qwiklabs-gcp-03-9a342013a3da
sparkJob:
  args:
  - '1000'
  jarFileUri:
  - file:///usr/lib/spark/examples/jars/spark-examples.jar
  mainClass: org.apache.spark.examples.SparkPi
status:
  state: DONE
  stateStartTime: '2025-12-28T10:45:32.456409Z'
statusHistory:
- state: PENDING
  stateStartTime: '2025-12-28T10:44:53.592055Z'
- state: SETUP_DONE
  stateStartTime: '2025-12-28T10:44:53.635936Z'
- details: Agent reported job success
  state: RUNNING
  stateStartTime: '2025-12-28T10:44:53.956122Z'
yarnApplications:
- name: Spark Pi
  progress: 1.0
  state: FINISHED
  trackingUrl: http://example-cluster-m.us-east1-c.c.qwiklabs-gcp-03-9a342013a3da.internal.:8088/proxy/application_1766918486251_0001/
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $
```

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```
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da)$ gcloud dataproc clusters update example-cluster --num-workers 4
Waiting on operation [projects/qwiklabs-gcp-03-9a342013a3da/regions/us-east1/operations/5071845c-1138-3629-b647-04b9c1fade99].
Waiting for cluster update operation...done.
Updated [https://dataproc.googleapis.com/v1/projects/qwiklabs-gcp-03-9a342013a3da/regions/us-east1/clusters/example-cluster].
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da)$
```

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Open Google Cloud console

Username

student-02-77569a450c62i

Password

1gd108qixhdc

Project ID

qwiklabs-gcp-03-9a34201i

Student Resources

Dataproc: Qwik Start - Qwiklabs

1. To change the number of workers in the cluster to four, run the following command:

gcloud dataproc clusters update example-cluster --num-workers 4

Your cluster's updated details are displayed in the command's output:

Waiting on operation [projects/qwiklabs-gcp-7f7aa0829e65200f/regions/global/operations/b86892cc-e71d-4e7b-aa5e-6030c945ea67].

Waiting for cluster update operation...done.

2. You can use the same command to decrease the number of worker nodes:

gcloud dataproc clusters update example-cluster --num-workers 2

Now you can create a Dataproc cluster and adjust the number of workers from the gcloud command line on the Google Cloud.

Lab instructions and tasks

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```
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $ gcloud dataproc clusters update example-cluster --num-workers 4
Waiting on operation [projects/qwiklabs-gcp-03-9a342013a3da/regions/us-east1/operations/5071845c-1138-3629-b647-04b9c1fade99].
Waiting for cluster update operation...done.
Updated [https://dataproc.googleapis.com/v1/projects/qwiklabs-gcp-03-9a342013a3da/regions/us-east1/clusters/example-cluster].
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $ gcloud dataproc clusters update example-cluster --num-workers 2
Waiting on operation [projects/qwiklabs-gcp-03-9a342013a3da/regions/us-east1/operations/db40ee2f-11ea-3b95-b364-d49258294110].
Waiting for cluster update operation...done.
Updated [https://dataproc.googleapis.com/v1/projects/qwiklabs-gcp-03-9a342013a3da/regions/us-east1/clusters/example-cluster].
student_02_77569a450c62@cloudshell:~ (qwiklabs-gcp-03-9a342013a3da) $
```

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