

Create and Manage Cloud SQL for PostgreSQL Instances: Challenge Lab

GSP355



- Cymbal Shops migrates legacy PostgreSQL inventory database to Cloud SQL using Database Migration Service for minimal downtime.
- Task 1: Execute continuous DMS migration from on-premises PostgreSQL to Cloud SQL, then promote destination to standalone read/write instance.
- Task 2: Secure Cloud SQL with IAM database authentication using GCP service accounts mapped to PostgreSQL roles.
- Task 3: Implement point-in-time recovery by enabling PITR with WAL retention for compliance and disaster recovery.
- Combines migration, security hardening, and robust recovery - core DBA modernization workflow.



Task 1. Migrate a stand-alone PostgreSQL database to a Cloud SQL for PostgreSQL instance

In this task you must migrate the stand-alone PostgreSQL `orders` database running on the `postgres-vm` virtual machine to a Cloud SQL for PostgreSQL instance using a Database Migration Services continuous migration job and VPC Peering connectivity.

Prepare the stand-alone PostgreSQL database for migration

Prepare the stand-alone PostgreSQL database so that it satisfies the Database Migration Services migration requirements.

1. In the Google Cloud console title bar, search for **Database Migration API** and the **Service Networking API** confirm both are enabled; if not, click **Enable** for each API.
2. Upgrade the target databases on the `postgres-vm` virtual machine with the `citext` database extension.





Database migration services continuous migration job and VPC peering connectivity.

Prepare the stand-alone PostgreSQL database for migration

Prepare the stand-alone PostgreSQL database so that it satisfies the Database Migration Services migration requirements.

1. In the Google Cloud console title bar, search for **Database Migration API** and the **Service Networking API** confirm both are enabled; if not, click **Enable** for each API.
2. Upgrade the target databases on the `postgres-vm` virtual machine with the `pglogical` database extension.
3. Install and configure the `pglogical` database extension on the stand-alone PostgreSQL database on the `postgres-vm` Compute Instance VM. The `pglogical` database extension package that you must install is named `postgresql-14-pglogical`.
4. Complete the configuration of the `pglogical` database extension by editing the PostgreSQL configuration file `/etc/postgresql/14/main/postgresql.conf` to enable the `pglogical` database extension and the `/etc/postgresql/14/main/pg_hba.conf` file to allow access from all hosts.





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each API.

2. Upgrade the target databases on the `postgres-vm` virtual machine with the `pglogical` database extension.
3. Install and configure the `pglogical` database extension on the stand-alone PostgreSQL database on the `postgres-vm` Compute Instance VM. The `pglogical` database extension package that you must install is named `postgresql-14-pglogical`.
4. Complete the configuration of the `pglogical` database extension by editing the PostgreSQL configuration file `/etc/postgresql/14/main/postgresql.conf` to enable the `pglogical` database extension and the `/etc/postgresql/14/main/pg_hba.conf` file to allow access from all hosts.
5. Create a new user on the stand-alone PostgreSQL installation on the `postgres-vm` virtual machine with the following user name and password:
 - **Migration user name:** Postgres Migration User
 - **Migration user password:** DMS_1s_cool!
6. Grant that user the required privileges and permissions for databases to be migrated.

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Start Lab

5. Create a new user on the stand-alone PostgreSQL installation on the `postgres-vm` virtual machine with the following user name and password:

- **Migration user name :** Postgres Migration User
- **Migration user password :** DMS_1s_cool!

6. Grant that user the required privileges and permissions for databases to be migrated.

Database Migration Services require that the migration user has privileges to specific schemata and relations of the target databases for migration, in this case that is the `orders` database.

The Database Migration Service requires all tables to be migrated to have a primary key.

7. Make sure that all of the tables in the `orders` database have a primary key set before you start the migration.

- `distribution_centers`
- `inventory_items`
- `order_items`
- `products`
- `users`

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- `inventory_items`
- `order_items`
- `products`
- `users`

Note: The detailed prerequisites for migrating a stand-alone PostgreSQL database to Cloud SQL for PostgreSQL are provided in the suggestion links in the Cloud Console GUI for Database Migration Services.

Should you need some help on the detailed steps you must take, you may refer to that documentation, or you can look at the detailed steps in the migration lab that is part of this course.

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```
student-00-b21f8b16ab10@postgresql-vm:~$ sudo apt install postgresql-14-pglogical
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  postgresql-14-pglogical
0 upgraded, 1 newly installed, 0 to remove and 8 not upgraded.
Need to get 443 kB of archives.
After this operation, 1277 kB of additional disk space will be used.
Get:1 http://apt.postgresql.org/pub/repos/apt bullseye-pgdg/main amd64 postgresql-14-pglogical amd64 2.4.6-1.pgdg11+1 [443 kB]
Fetched 443 kB in 0s (2196 kB/s)
Selecting previously unselected package postgresql-14-pglogical.
(Reading database ... 80477 files and directories currently installed.)
Preparing to unpack .../postgresql-14-pglogical_2.4.6-1.pgdg11+1_amd64.deb ...
Unpacking postgresql-14-pglogical (2.4.6-1.pgdg11+1) ...
Setting up postgresql-14-pglogical (2.4.6-1.pgdg11+1) ...
Processing triggers for postgresql-common (287.pgdg11+1) ...
Building PostgreSQL dictionaries from installed myspell/hunspell packages...
Removing obsolete dictionary files:
student-00-b21f8b16ab10@postgresql-vm:~$ sudo su - postgres -c "gsutil cp gs://cloud-training/gsp918/pg_hba_append.conf ."
sudo su - postgres -c "gsutil cp gs://cloud-training/gsp918/postgresql_append.conf ."
sudo su - postgres -c "cat pg_hba_append.conf >> /etc/postgresql/14/main/pg_hba.conf"
sudo su - postgres -c "cat postgresql_append.conf >> /etc/postgresql/14/main/postgresql.conf"
sudo systemctl restart postgresql@14-main
Copying gs://cloud-training/gsp918/pg_hba_append.conf...
/ [1 files][ 68.0 B/ 68.0 B]
Operation completed over 1 objects/68.0 B.
Copying gs://cloud-training/gsp918/postgresql_append.conf...
/ [1 files][ 543.0 B/ 543.0 B]
```

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```
Reading state information... Done
The following NEW packages will be installed:
  postgresql-14-pglogical
0 upgraded, 1 newly installed, 0 to remove and 8 not upgraded.
Need to get 443 kB of archives.
After this operation, 1277 kB of additional disk space will be used.
Get:1 http://apt.postgresql.org/pub/repos/apt bullseye-pgdg/main amd64 postgresql-14-pglogical amd64 2.4.6-1.pgdg11+1 [443 kB]
Fetched 443 kB in 0s (2196 kB/s)
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(Reading database ... 80477 files and directories currently installed.)
Preparing to unpack .../postgresql-14-pglogical_2.4.6-1.pgdg11+1_amd64.deb ...
Unpacking postgresql-14-pglogical (2.4.6-1.pgdg11+1) ...
Setting up postgresql-14-pglogical (2.4.6-1.pgdg11+1) ...
Processing triggers for postgresql-common (287.pgdg11+1) ...
Building PostgreSQL dictionaries from installed myspell/hunspell packages...
Removing obsolete dictionary files:
student-00-b21f8b16ab10@postgresql-vm:~$ sudo su - postgres -c "gsutil cp gs://cloud-training/gsp918/pg_hba_append.conf ."
sudo su - postgres -c "gsutil cp gs://cloud-training/gsp918/postgresql_append.conf ."
sudo su - postgres -c "cat pg_hba_append.conf >> /etc/postgresql/14/main/pg_hba.conf"
sudo su - postgres -c "cat postgresql_append.conf >> /etc/postgresql/14/main/postgresql.conf"
sudo systemctl restart postgresql@14-main
Copying gs://cloud-training/gsp918/pg_hba_append.conf...
/ [1 files] [ 68.0 B/ 68.0 B]
Operation completed over 1 objects/68.0 B.
Copying gs://cloud-training/gsp918/postgresql_append.conf...
/ [1 files] [ 543.0 B/ 543.0 B]
Operation completed over 1 objects/543.0 B.
student-00-b21f8b16ab10@postgresql-vm:~$ 
student-00-b21f8b16ab10@postgresql-vm:~$ 
```

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```
Processing triggers for postgresql-common (287.pgdg11+1) ...
Building PostgreSQL dictionaries from installed myspell/hunspell packages...
Removing obsolete dictionary files:
student-00-b21f8b16ab10@postgresql-vm:~$ sudo su - postgres -c "gsutil cp gs://cloud-training/gsp918/pg_hba_append.conf ."
sudo su - postgres -c "gsutil cp gs://cloud-training/gsp918/postgresql_append.conf ."
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sudo systemctl restart postgresql@14-main
Copying gs://cloud-training/gsp918/pg_hba_append.conf...
/ [1 files] [ 68.0 B/ 68.0 B]
Operation completed over 1 objects/68.0 B.
Copying gs://cloud-training/gsp918/postgresql_append.conf...
/ [1 files] [ 543.0 B/ 543.0 B]
Operation completed over 1 objects/543.0 B.
student-00-b21f8b16ab10@postgresql-vm:~$ 
student-00-b21f8b16ab10@postgresql-vm:~$ sudo su - postgres
postgres@postgresql-vm:~$ psql
psql (14.20 (Debian 14.20-1.pgdg11+1))
Type "help" for help.

postgres=# \c postgres;
You are now connected to database "postgres" as user "postgres".
postgres=# CREATE EXTENSION pglogical;
CREATE EXTENSION
postgres=# \c orders;
You are now connected to database "orders" as user "postgres".
orders=# CREATE EXTENSION pglogical;
CREATE EXTENSION
orders=# 
```

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```
postgres=# CREATE EXTENSION pglogical;
CREATE EXTENSION
postgres=# \c orders;
You are now connected to database "orders" as user "postgres".
orders=# CREATE EXTENSION pglogical;
CREATE EXTENSION
orders=# CREATE USER import_admin PASSWORD 'DMS_ls_cool!';
ALTER DATABASE orders OWNER TO import_admin;
ALTER ROLE import_admin WITH REPLICATION;
CREATE ROLE
ALTER DATABASE
ALTER ROLE
orders=# \c orders;
You are now connected to database "orders" as user "postgres".
orders=# SELECT column_name FROM information_schema.columns WHERE table_name = 'inventory_items' AND column_name = 'id';
ALTER TABLE inventory_items ADD PRIMARY KEY (id);
column_name
-----
id
(1 row)

ALTER TABLE
orders=# GRANT USAGE ON SCHEMA pglogical TO import_admin;
GRANT ALL ON SCHEMA pglogical TO import_admin;
GRANT SELECT ON pglogical.tables TO import_admin;
GRANT SELECT ON pglogical.depend TO import_admin;
GRANT SELECT ON pglogical.local_node TO import_admin;
GRANT SELECT ON pglogical.local_sync_status TO import_admin;
GRANT SELECT ON pglogical.node TO import_admin;
```

Sunset coming 6 5:24 pm

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```
(1 row)

ALTER TABLE
orders=# GRANT USAGE ON SCHEMA pglogical TO import_admin;
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GRANT SELECT ON pglogical.depend TO import_admin;
GRANT SELECT ON pglogical.local_node TO import_admin;
GRANT SELECT ON pglogical.local_sync_status TO import_admin;
GRANT SELECT ON pglogical.node TO import_admin;
GRANT SELECT ON pglogical.node_interface TO import_admin;
GRANT SELECT ON pglogical.queue TO import_admin;
GRANT SELECT ON pglogical.replication_set TO import_admin;
GRANT SELECT ON pglogical.replication_set_seq TO import_admin;
GRANT SELECT ON pglogical.replication_set_table TO import_admin;
GRANT SELECT ON pglogical.sequence_state TO import_admin;
GRANT SELECT ON pglogical.subscription TO import_admin;
GRANT
```

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Open Editor

API

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```
GRANT
GRANT
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GRANT
GRANT
orders=# GRANT USAGE ON SCHEMA public TO import_admin;
GRANT ALL ON SCHEMA public TO import_admin;
GRANT SELECT ON public.distribution_centers TO import_admin;
GRANT SELECT ON public.inventory_items TO import_admin;
GRANT SELECT ON public.order_items TO import_admin;
GRANT SELECT ON public.products TO import_admin;
GRANT SELECT ON public.users TO import_admin;
GRANT
GRANT
GRANT
GRANT
GRANT
GRANT
orders=# ALTER TABLE public.distribution_centers OWNER TO import_admin;
ALTER TABLE public.inventory_items OWNER TO import_admin;
ALTER TABLE public.order_items OWNER TO import_admin;
ALTER TABLE public.products OWNER TO import_admin;
ALTER TABLE public.users OWNER TO import_admin;
ALTER TABLE
ALTER TABLE
ALTER TABLE
```

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API

GRANT
GRANT
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ALTER TABLE public.inventory_items OWNER TO import_admin;
ALTER TABLE public.order_items OWNER TO import_admin;
ALTER TABLE public.products OWNER TO import_admin;
ALTER TABLE public.users OWNER TO import_admin;
ALTER TABLE
ALTER TABLE
ALTER TABLE
ALTER TABLE
ALTER TABLE
ALTER TABLE
orders=# \c postgres;
You are now connected to database "postgres" as user "postgres".
postgres=# GRANT USAGE ON SCHEMA pglogical TO import_admin;
GRANT ALL ON SCHEMA pglogical TO import_admin;
GRANT SELECT ON pglogical.tables TO import_admin;
GRANT SELECT ON pglogical.depend TO import_admin;
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GRANT SELECT ON pglogical.node_interface TO import_admin;
GRANT SELECT ON pglogical.queue TO import_admin;
GRANT SELECT ON pglogical.replication_set TO import_admin;
GRANT SELECT ON pglogical.replication_set_seq TO import_admin;
GRANT SELECT ON pglogical.replication_set_table TO import_admin;
GRANT SELECT ON pglogical.sequence_state TO import_admin;

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ALTER TABLE
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postgres=# GRANT USAGE ON SCHEMA pglogical TO import_admin;
GRANT ALL ON SCHEMA pglogical TO import_admin;
GRANT SELECT ON pglogical.tables TO import_admin;
GRANT SELECT ON pglogical.depend TO import_admin;
GRANT SELECT ON pglogical.local_node TO import_admin;
GRANT SELECT ON pglogical.local_sync_status TO import_admin;
GRANT SELECT ON pglogical.node TO import_admin;
GRANT SELECT ON pglogical.node_interface TO import_admin;
GRANT SELECT ON pglogical.queue TO import_admin;
GRANT SELECT ON pglogical.replication_set TO import_admin;
GRANT SELECT ON pglogical.replication_set_seq TO import_admin;
GRANT SELECT ON pglogical.replication_set_table TO import_admin;
GRANT SELECT ON pglogical.sequence_state TO import_admin;
GRANT SELECT ON pglogical.subscription TO import_admin;
GRANT
```


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https://console.cloud.google.com/dbmigration/migrations?pli=1&authuser=1&project=qwiklabs-gcp-00-97850fa62d64

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Database Migration / Migration jobs

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- Gemini-powered application code conversion preview of Oracle SQL to PostgreSQL in your Java applications.

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Migration jobs allow you to move data between source and destination databases. You can define your source by creating a new job, or just its connection profile. [Learn more](#)

Jobs (0) Drafts (0)

Filter migration jobs

<input type="checkbox"/>	<input checked="" type="radio"/>	Migration job name	Status ↑	Phase	Source connection profile	Destination ID
No rows to display						

Release Notes

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Username: student-00-b21f8b16ab Password: SDcMx936k1re Project ID: qwiklabs-gcp-00-97850 PostgreSQL Migration User: import_admin Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i Database Table to be secured with IAM Authentication: users Point-in-time recovery retention days: 6

Migrate the stand-alone PostgreSQL database to a Cloud SQL for PostgreSQL instance

To perform the migration using Database Migration Services, complete the following steps:

1. Create a new Database Migration Service connection profile for the stand-alone PostgreSQL database, using the credentials of the `import_admin` migration user you created earlier.
 - **Username:** `import_admin`
 - **Password:** `DMS_1s_cool!`
 - **Region** must be set to `us-east1`
2. Configure the connection profile using the internal ip-address of the source compute instance.
3. Create a new continuous Database Migration Service job.

As part of the migration job configuration, make sure that you specify the following properties for the destination Cloud SQL instance:

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Region must be set to us-east1

2. Configure the connection profile using the internal ip-address of the source compute instance.

3. Create a new continuous Database Migration Service job.

As part of the migration job configuration, make sure that you specify the following properties for the destination Cloud SQL instance:

Migration job type * Continuous

Before you continue, review the prerequisites

Depending on your migration type, there are some steps you should take to make sure the job is successful. You can always test your migration job before starting it to make sure it's correctly set up.

PostgreSQL source OPEN

For this migration job to be able to pull data from PostgreSQL, the database needs some specific configuration.

Connectivity OPEN

Choose how you'd like to connect your source and destination databases and review how to connect successfully.

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Username: student-00-b21f8b16ab

Password: SDcMx936k1re

Project ID: qwiklabs-gcp-00-97850

PostgreSQL Migration User: import_admin

Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i

Database Table to be secured with IAM Authentication: users

Point-in-time recovery retention days: 6

database needs some specific configuration.

Connectivity

Choose how you'd like to connect your source and destination databases and review how to connect successfully.

OPEN

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Task 4. Configure and test point-in-time

4. Select Existing instance for the destination type, and choose **postgres81-yqk2i** as the Destination Instance ID.

Note: Wait while the private ip-address is allocated. Once the Create & Continue appears, you can proceed.

5. For the **Connectivity Method**, you must use VPC peering with the **default** VPC network.

6. Test and then start the continuous migration job.

If you do not correctly prepare the source PostgreSQL environment, the migration might fail completely, or it might fail to migrate some individual tables. If some tables are missing, even though the migration appears to be working otherwise, check that you have correctly configured all of the source database tables.

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Database Migration / Migration jobs / Create migration

Create a migration job

Get started dev23, PostgreSQL to Cloud SQL for PostgreSQL (Continuous)

Define a source Not configured

Define a destination Not configured

Define connectivity method Not configured

Configure migration databases Not configured

Test and create migration job Not tested

Save & Exit Cancel

Define your source

Your data source's connection profile represents all the info needed to connect. Choose a connection profile that already exists. [Learn more](#)

Source database engine PostgreSQL

Select source connection profile * techcode

Connection profile name	techcode
Connection profile ID	techcode
Region	us-east1 (South Carolina)
Hostname or IP address	35.237.250.121
Port	5432
Username	import_admin
Encryption type (SSL/TLS)	None

Customize parallelism configurations

SHOW PARALLELISM CONFIGURATIONS

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Database Migration / Migration jobs / Create migration

Create a migration job

Get started (dev23, PostgreSQL to Cloud SQL for PostgreSQL (Continuous))

Define a source (Not configured)

Define a destination (Not configured)

Define connectivity method (Not configured)

Configure migration databases (Not configured)

Test and create migration job (Not tested)

Save & Exit | Cancel

Your data source's connection profile represents all the info needed to connect. Choose a connection profile that already exists. [Learn more](#)

Source database engine: PostgreSQL

Select source connection profile *

Filter Type to filter

techcode

Create a connection profile

Port: 5432

Username: import_admin

Encryption type (SSL/TLS): None

Customize parallelism configurations

SHOW PARALLELISM CONFIGURATIONS

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Database Migration / Migration jobs / Create migration

Create a migration job

Get started dev23, PostgreSQL to Cloud SQL for PostgreSQL (Continuous)

Define a source Not configured

Define a destination Not configured

Define connectivity method Not configured

Configure migration databases Not configured

Test and create migration job Not tested

Save & Exit Cancel

Define your source

Your data source's connection profile represents all the info needed to connect. Choose a connection profile that already exists. [Learn more](#)

Source database engine PostgreSQL

Select source connection profile * dev23s

Connection profile name	dev23s
Connection profile ID	dev23s
Region	us-east1 (South Carolina)
Hostname or IP address	35.237.250.121
Port	5432
Username	import_admin
Encryption type (SSL/TLS)	None

Customize parallelism configurations

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Username: student-00-b21f8b16ab Password: SDcMx936k1re Project ID: qwiklabs-gcp-00-97850 PostgreSQL Migration User: import_admin Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i Database Table to be secured with IAM Authentication: users Point-in-time recovery retention days: 6

Depending on your migration type, there are some steps you should take to make sure the job is successful. You can always test your migration job before starting it to make sure it's correctly set up.

PostgreSQL source OPEN
For this migration job to be able to pull data from PostgreSQL, the database needs some specific configuration.

Connectivity OPEN
Choose how you'd like to connect your source and destination databases and review how to connect successfully.

4. Select **Existing instance** for the destination type, and choose **postgres81-yqk2i** as the **Destination Instance ID**.

Note: Wait while the private ip-address is allocated. Once the **Create & Continue** appears, you can proceed.

5. For the **Connectivity Method**, you must use **VPC peering** with the **default VPC** network.

6. Test and then start the continuous migration job.

If you do not correctly prepare the source PostgreSQL environment, the migration might

20/100 Lab instructions and tasks

GSP355 Overview Setup and requirements Challenge scenario Task 1. Migrate a stand-alone PostgreSQL database to a Cloud SQL for PostgreSQL instance Task 2. Promote a Cloud SQL to be a stand-alone instance for reading and writing data Task 3. Implement Cloud SQL for PostgreSQL IAM database authentication Task 4. Configure and test point-in-time

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Database Migration / Migration jobs / Create migration

Create a migration job

Get started dev23, PostgreSQL to Cloud SQL for PostgreSQL (Continuous)

Define a source dev23s

Define a destination Not configured

Define connectivity method Not configured

Configure migration databases Not configured

Test and create migration job Not tested

Save & Exit Cancel

your migration job. For a smooth database migration, ensure your instance has adequate machine and storage configurations to accommodate the size of your source database. [Learn more](#)

Destination database engine Cloud SQL for PostgreSQL

Type of destination instance * Existing instance

This choice is permanent.

DMS will demote the existing instance and convert it into a replica for the source database. Only empty instances are supported, otherwise the migration will fail to start. [Learn more](#)

Select destination instance

Instance ID * postgres81-yqk2i

Instance ID	postgres81-yqk2i
Region	us-east1 (South Carolina)
Database version	POSTGRES_14

Select & Continue

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Database Migration / Migration jobs / Create migration

Create a migration job

Get started: dev23, PostgreSQL to Cloud SQL for PostgreSQL (Continuous)

Define a source: dev23s

Define a destination: Not configured

Define connectivity method: Not configured

Configure migration databases: Not configured

Test and create migration job: Not tested

Save & Exit | Cancel | Select & Continue

Confirm migration to postgres81-yqk2i?

Note: Your destination instance will be demoted and converted into a replica for your source database. [Learn more](#)

This process might take several minutes. You can safely save the migration job and return later.

Confirm by typing the instance name: postgres81-yqk2i

postgres81-yqk2i*

Cancel | Confirm & continue

Instance ID: postgres81-yqk2i
Region: us-east1 (South Carolina)
Database version: POSTGRES_14

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Database Migration / Migration jobs / Create migration

Create a migration job

Get started dev23, PostgreSQL to Cloud SQL for PostgreSQL (Continuous)

Define a source dev23s

Define a destination postgres81-yqk2i

Define connectivity method Not configured

Configure migration databases Not configured

Test and create migration job Not tested

Save & Exit Cancel

Define connectivity method

Choose the best connectivity method for your migration job based on your security and throughput requirements.

Need help choosing? [View connectivity guide](#)

Connectivity method *

- IP allowlist
Access from external networks, not secured
- Reverse-SSH tunnel via cloud-hosted VM
Access from external networks, secure, low throughput
- VPC peering
Access a data source reachable via VPC or VPN

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Database Migration / Migration jobs / Create migration

Create a migration job

Get started dev23, PostgreSQL to Cloud SQL for PostgreSQL (Continuous)

Define a source dev23s

Define a destination postgres81-yqk2i

4 Define connectivity method Not configured

5 Configure migration databases Not configured

6 Test and create migration job Not tested

Save & Exit Cancel

Choose the best connectivity method for your migration job based on your security and throughput requirements.

Need help choosing? [View connectivity guide](#)

Connectivity method * VPC peering

Selecting VPC peering as the connectivity method will update the instance to turn on private IP.

Configure your destination to accept connections

Make sure the replication connections section of the pg_hba.conf file or the security groups definitions in AWS RDS on the source database are updated to accept connections from the Cloud SQL VPC's IP address range.

Select the VPC network of your source

Select the network where your source database resides. Once you save, your source instance will be authorized to connect to it. [Learn more](#)

VPC * default

Configure & continue

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Database Migration / Migration jobs / Create migration

Create a migration job

Get started dev23, PostgreSQL to Cloud SQL for PostgreSQL (Continuous)

Define a source dev23s

Define a destination postgres81-yqk2i

Define connectivity method VPC peering

Configure migration databases Not configured

Test and create migration job Not tested

Select objects to migrate

Databases to migrate All databases

The list below represent all databases from the source instance. Select the databases that you want DMS to migrate into a destination.

Save & continue

Save & Exit Cancel

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Define a source dev23s

Define a destination postgres81-yqk2i

Define connectivity method VPC peering

Configure migration databases All databases

Test and create migration job Not tested

Migration job name dev23
Source database engine PostgreSQL
Destination database engine Cloud SQL for PostgreSQL
Type Continuous

Connection profile display name dev23s
Hostname:Port 35.237.250.121:5432
Full dump method Logical
Data dump parallelism level Optimal
Destination instance ID postgres81-yqk2i
Region us-east1
Connectivity method VPC peering
Databases to migrate All databases

Save & Exit Cancel

Test the migration job Test job

Test your job to make sure all prerequisites were fulfilled to ensure your source can connect to your destination.

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Database Migration / Migration jobs / Create migration

Create a migration job

Get started dev23, PostgreSQL to Cloud SQL for PostgreSQL (Continuous)

Define a source dev23s

Define a destination postgres81-yqk2i

Define connectivity method VPC peering

Configure migration databases All databases

Test and create migration job Test success

Hostname:Port 35.237.250.121:5432
Full dump method Logical
Data dump parallelism level Optimal
Destination instance ID postgres81-yqk2i
Region us-east1
Connectivity method VPC peering
Databases to migrate All databases

Test the migration job

Test your job to make sure all prerequisites were fulfilled to ensure your source can connect to your destination.

Test run complete

Your migration job test was successful! You can create this job without starting it yet, or start it immediately.

Retest job

Create job Create & start job

Save & Exit Cancel

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Create a migration job

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Define a source dev23s

Define a destination postgres81-yqk2i

Define connectivity method VPC peering

Configure migration databases All databases

Test and create migration job Test success

Hostname:Port 35.237.250.121:5432
Full dump method Logical
Data dump parallelism level Optimal
Destination instance ID postgres81-yqk2i
Region us-east1
Connectivity method VPC peering
Databases to migrate All databases

Test the migration job

Test your job to make sure all prerequisites were fulfilled to ensure your source can connect to your destination.

Test run complete

Your migration job test was successful! You can create this job without starting it yet, or start it immediately.

Retest job

Create job Create & start job

Save & Exit Cancel

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 Create a migration job

- ✓ Get started
dev23, PostgreSQL to Cloud SQL for PostgreSQL
(Continuous)
 - ✓ Define a source
dev23s
 - ✓ Define a destination
postgres81-yqk2i
 - ✓ Define connectivity method
VPC peering
 - ✓ Configure migration databases
All databases
 - 6 Test and create migration job
Test success

Hostname:Port	35.237.250.121:5432
Full dump method	Logical
Data dump parallelism level	Optimal
Destination instance ID	postgres81-yqk2i
Region	us-east1
Connectivity method	VPC peering

Create & start migration job?

Keep in mind: For tables in your source PostgreSQL database that don't have primary keys, only the initial snapshot and INSERT statements are migrated.

[Cancel](#) [Create & start](#)

Test run complete

- ✓ Your migration job test was successful! You can create this job without starting it yet, or start it immediately.

Retest job

Create job

Create & start job

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Database Migration / Migration jobs / Migration job details: dev23

← dev23 Edit Resume Stop Restart Promote Delete View logs ▾

Migration job name	dev23
Status	Running
Phase	Full dump
Source/Destination	PostgreSQL / Cloud SQL for PostgreSQL
Migration type	Continuous

Show all details

Databases Monitoring

2 Databases Refresh Restart failed databases

Filter Enter property name or value

Name	Status ↑	Phase	Errors	Replication delay
orders	Running	Full dump	0 View details	0 B
postgres	Running	Full dump	0 View details	0 B

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Task 3. Implement Cloud SQL for PostgreSQL IAM database authentication

In this task you must configure the newly migrated Cloud SQL for PostgreSQL instance to support Cloud IAM users and IAM database authentication. You must also patch the Cloud SQL for PostgreSQL instance to add the public IP address of the `postgres-vm` virtual machine to the list of networks that are allowed to connect to the instance.

1. Patch the `postgres81-yqk2i` Cloud SQL instance to allow connections from the public ip-address of the `postgres-vm` virtual machine.
 - In the `postgres81-yqk2i` Cloud SQL instance, go to **connections > Networking**.
 - Under the **Public IP**, click **ADD A NETWORK**. For the network, use the external IP of the `postgres-vm` virtual machine.
2. In the `postgres81-yqk2i` Cloud SQL instance, create a Cloud SQL IAM user using the lab student ID, `student-00-b21f8b16ab10@qwikelabs.net`, as the principal account name.
 - Click **Users > Add user account**, then select **Cloud IAM**.

GSP355 Overview Setup and requirements Challenge scenario Task 1. Migrate a stand-alone PostgreSQL database to a Cloud SQL for PostgreSQL instance Task 2. Promote a Cloud SQL to be a stand-alone instance for reading and writing data Task 3. Implement Cloud SQL for PostgreSQL IAM database authentication Task 4. Configure and test point-in-time

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Get Started Instances Backups

Starting Feb 1, 2025, all instances running community end-of-life versions of PostgreSQL and MySQL are under extended support. These instances will be charged for extended support from May 1, 2025. Upgrade your instances running end-of-life versions before May 1, 2025 to prevent additional charges. [Learn more](#)

View affected instances Dismiss

Filter Enter property name or value

Status	Instance ID	Issues	Cloud SQL edition	Type	Public IP address	Private IP address	Ins	Actions
<input type="checkbox"/>	postgres81-yqk2i-master		Enterprise	PostgreSQL external primary				⋮
<input checked="" type="checkbox"/>	postgres81-yqk2i		Enterprise	PostgreSQL read replica	34.148.178.93	10.116.0.3	qv	⋮

Release Notes

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Cloud SQL Connections

All instances > postgres81-yqk2i-master > postgres81-yqk2i

✓ postgres81-yqk2i PostgreSQL read replica

Summary Networking Security Connectivity Tests

Networking

Connection name	qwiklabs-gcp-00-97850fa62d64:us-east1:postgres81-yqk2i
Private IP connectivity	Enabled
Associated networking	projects/qwiklabs-gcp-00-97850fa62d64/global/networks/default
Network	default
Service connection method	Private Services Access
Allocated IP range	Automatically assigned IP range
Internal IP address	10.116.0.3
Public IP connectivity	Enabled
Public IP address	34.148.178.93
Outgoing IP address	104.196.192.6

Need help connecting?
Tools, guided workflows and helpful links to help you connect to your Cloud SQL instance.

[Test Connection from GCE](#) New

[Docs: Connection Overview](#)

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Cloud SQL Connections

All instances > postgres81-yqk2i-master > postgres81-yqk2i
✓ postgres81-yqk2i PostgreSQL read replica

Summary Networking Security Connectivity Tests

Choose how you want your source to connect to this instance, then define which networks are authorized to connect. [Learn more](#)

You can use the Cloud SQL Proxy for extra security with either option. [Learn more](#)

Instance IP assignment

Private IP Assigns an internal, Google-hosted VPC IP address. Requires additional APIs and permissions. [Learn more](#)

Choose a private connection method [?](#)

Private Service Access (PSA) For connecting to single VPC networks.

VPC Network default

Private Service Connect (PSC) For connecting to single or multiple VPC networks. [Learn more](#)

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/connections/networking?authuser=0&project=qwiklabs-gcp-00-97850fa62d64

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Replica instance

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- Query insights
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- Users
- Databases
- Replicas
- Operations

Release Notes

Cloud SQL

cloud sql

Connections

Private Service Connect (PSC)

For connecting to single or multiple VPC networks. [Learn more](#)

Public IP

Assigns an external, internet-accessible IP address. Requires using an authorized network or the Cloud SQL Proxy to connect to this instance. [Learn more](#)

Authorized networks

You can specify CIDR ranges to allow IP addresses in those ranges to access your instance. [Learn more](#)

Add a network

Google Cloud services authorization

Enable private path

Allows other Google Cloud services like BigQuery to access data and make queries over Private IP. [Learn more](#)

App Engine authorization

By default, apps in this project use the project's default service account for authorization. However, you can assign a different service account to specific app versions. To manage access for apps in other projects, use [Cloud IAM](#). [Learn more](#)

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Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input checked="" type="checkbox"/>	postgresql-vm	us-east1-c			10.142.0.2 (nic0)	35.237.250.121 (nic0)	SSH

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Control traffic to and from a VM instance

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Google Cloud qwiklabs-gcp-00-97850fa62d64 cloud sql X Search

Cloud SQL Connections

Replica instance

- Overview
- Cloud SQL Studio
- System insights
- Query insights
- Connections**
- Users
- Databases
- Replicas
- Operations

Connections

Private Service Connect (PSC)
For connecting to single or multiple VPC networks. [Learn more](#)

Public IP
Assigns an external, internet-accessible IP address. Requires using an authorized network or the Cloud SQL Proxy to connect to this instance. [Learn more](#)

Authorized networks

You can specify CIDR ranges to allow IP addresses in those ranges to access your instance. [Learn more](#)

New network

Name: postgres-vm

IP range *: 35.237.250.121

Use My IP [?](#)

Use CIDR notation. Example: 199.27.25.0/24

Done

Add a network

Sunset 6 5:24 pm

Search

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VM instances – Compute Engine – qv Create a migration job – Database M postres81-yqk2i – Connections +

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Cloud SQL Connections

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postgres-vm (35.237.250.121) (Not saved) [Delete](#)

Add a network

Google Cloud services authorization

Enable private path
Allows other Google Cloud services like BigQuery to access data and make queries over Private IP. [Learn more](#)

App Engine authorization
By default, apps in this project use the project's default service account for authorization. However, you can assign a different service account to specific app versions. To manage access for apps in other projects, use [Cloud IAM](#). [Learn more](#)

Sunset 6 5:24 pm

Search

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Connections | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/connections/networking?authuser=0&project=qwiklabs-gcp-00-97850fa62d64

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Cloud SQL Connections

Replica instance

- Overview
- Cloud SQL Studio
- System insights
- Query insights
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Connections

Private Service Connect (PSC)
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Authorized networks
You can specify CIDR ranges to allow IP addresses in those ranges to access your instance. [Learn more](#)

postres-vm (35.237.250.121) Delete

Add a network

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Allows other Google Cloud services like BigQuery to access data and make queries over Private IP. [Learn more](#)

App Engine authorization
By default, apps in this project use the project's default service account for authorization. However, you can assign a different service account to specific app versions. To manage access for apps in other projects, use [Cloud IAM](#). [Learn more](#)

Save Discard Changes

Uploads and qwiklabs-gcp-00-9785... operations

Edited [postgres81-yqk2i](#) 5:04:07 PM GMT+5

6 Trending videos The Hunger Ga...

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Users – Cloud SQL | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/users?authuser=0&project=qwiklabs-gcp-00-97850fa62d64

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Google Cloud qwiklabs-gcp-00-97850fa62d64 cloud sql X Search

Cloud SQL Users

All instances > postgres81-yqk2i-master > postgres81-yqk2i

postgres81-yqk2i PostgreSQL read replica

User accounts enable users and applications to connect to your instance. [Learn more](#)

+ Add user account

Added users Authenticated IAM group members

These are accounts that you have granted instance access to, using either built-in or IAM authentication.

User name ↑	Authentication
cloudsqlexternalsync	Built-in
postgres	Built-in

Release Notes

Uploads and qwiklabs-gcp-00-9785... operations

Edited [postgres81-yqk2i](#) 5:04:07 PM GMT+5

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Users – Cloud SQL | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/users?authuser=0&project=qwiklabs-gcp-00-97850fa62d64

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Google Cloud qwiklabs-gcp-00-97850fa62d64 cloud sql

Cloud SQL Users

All instances > postgres81-yqk2i-master > postgres81-yqk2i

postgres81-yqk2i
PostgreSQL read replica

User accounts enable users and applications to connect to your instance. [Learn more](#)

[+ Add user account](#)

[Added users](#) [Authenticated IAM group members](#)

These are accounts that you have granted instance access to, using either built-in or IAM authentication.

User name ↑	Authentication
cloudsqlexternalsync	Built-in
postgres	Built-in

Add Cancel

Add a user account to instance postgres81-yqk2i

Choose how to authenticate
You can manage access to this instance using Cloud IAM or PostgreSQL built-in authentication. [Learn more](#)

Built-in authentication
Creates a new username and password specific to this instance. User account will have cloudsqlsuperuser root access, but you can customize that later as needed. [Learn more](#)

Cloud IAM
Adds an existing IAM principal as a user account on this instance. The IAM principal can be an IAM user, Service Account, or a Group. The IAM principal must have cloudsql.instances.login permission using the predefined Cloud SQL Instance User IAM role or custom IAM role in the IAM policy of the instance's project.

IAM principal *

After you create a user account with Cloud IAM authentication, it will not have database privileges by default, so make sure to grant required database privileges using the GRANT statement. [Learn more](#)

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Users – Cloud SQL | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/users?authuser=0&project=qwiklabs-gcp-00-97850fa62d64

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Google Cloud qwiklabs-gcp-00-97850fa62d64 cloud sql X Search

Cloud SQL Users

All instances > postgres81-yqk2i-master > postgres81-yqk2i

postgres81-yqk2i PostgreSQL read replica

User accounts enable users and applications to connect to your instance. [Learn more](#)

+ Add user account

Added users Authenticated IAM group members

These are accounts that you have granted instance access to, using either built-in or IAM authentication.

User name ↑	Authentication
cloudsqlexternalsync	Built-in
postgres	Built-in
student-00-b21f8b16ab10@qwiklabs.net	IAM (user)

IAM role added successfully

Uploads and qwiklabs-gcp-00-97850fa62d64 operations

Edited postgres81-yqk2i 5:05:53 PM GMT+5

Edited postgres81-yqk2i 5:04:07 PM GMT+5

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Overview – C | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/overview?authuser=0&project=qwiklabs-gcp-00-97850fa62d64

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Google Cloud qwiklabs-gcp-00-97850fa62d64 cloud sql X Search

Cloud SQL Overview Edit Export Restart Delete

Replica instance

- Overview
- Cloud SQL Studio
- System insights
- Query insights
- Connections
- Users
- Databases
- Replicas
- Operations

VPC network default
Allocated IP range ⓘ Automatically assigned IP range
Internal IP address 10.116.0.3 ⓘ
Public IP connectivity ⓘ Enabled
Public IP address 34.148.178.93 ⓘ
Outgoing IP address 104.196.192.6 ⓘ
Default TCP database port number 5432 ⓘ

Need help connecting?
Review the documentation to learn about the many ways to connect to your instance. [Learn more](#) ⓘ
To connect using gcloud,
[Open Cloud Shell](#)

Service account p1015244486798-2l66kj@gcp-sa-cloud-sql.iam.gserviceaccount.com ⓘ

Operations and logs

Database labels goog-dms-instance : true

Edit configuration

Maintenance Maintenance timing ⓘ Cloud SQL chooses the maintenance timing.
Maintenance window Updates may occur any day of the week.
Notifications Off
Upcoming No maintenance scheduled right now.
Maintenance version ⓘ POSTGRES_14_20.R20251004.01_26
Instance has the latest supported maintenance version.

Edit maintenance preferences on primary instance

Edit notification preferences

Uploads and qwiklabs-gcp-00-97850fa62d64 operations

- Edited [postgres81-yqk2i](#) 5:05:53 PM GMT+5
- Edited [postgres81-yqk2i](#) 5:04:07 PM GMT+5

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Create and Manage Cloud SQL for PostgreSQL Instances

https://partner.skills.google/course_templates/652/labs/564283

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What do you want to learn today?

Contents

Create and Manage Cloud SQL for PostgreSQL Instances

Username: student-00-b21f8b16ab

Password: SDcMx936k1re

Project ID: qwiklabs-gcp-00-97850

PostgreSQL Migration User: import_admin

Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i

Database Table to be secured with IAM Authentication: users

Point-in-time recovery retention days: 6

using the lab student ID, `student-00-b21f8b16ab10@qwiklabs.net`, as the principal account name.

- Click **Users > Add user account**, then select **Cloud IAM**.

3. Grant `SELECT` permission to the Cloud IAM user for the `users` table.

- In the `postgres81-yqk2i` Cloud SQL instance, go to **Overview**. Under **Connect to this instance**, click **Open Cloud Shell**.
- For the password enter `supersecret!`. Then connect to the `orders` database using `\c orders;` command.
- Again for the password enter `supersecret!`.
- Use the following command to grant `SELECT` permission. Replace the **Table_Name** and **Qwiklabs_User_Account_Name** variables with the correct values.

```
GRANT SELECT ON Table_Name TO "Qwiklabs_User_Account_Name";
```

4. Run the following query as the `student-00-b21f8b16ab10@qwiklabs.net`

40/100

Lab instructions and tasks

GSP355 Overview Setup and requirements Challenge scenario Task 1. Migrate a stand-alone PostgreSQL database to a Cloud SQL for PostgreSQL instance Task 2. Promote a Cloud SQL to be a stand-alone instance for reading and writing data Task 3. Implement Cloud SQL for PostgreSQL IAM database authentication Task 4. Configure and test point-in-time

Next >

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student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)\$ gcloud sql connect postgres81-yqk2i --user=postgres --quiet
ERROR: (gcloud.sql.connect) UNAUTHENTICATED: Request had invalid authentication credentials. Expected OAuth 2 access token, login cookie or other valid authentication credential. See <https://developers.google.com/identity/sign-in/web/devconsole-project>. This command is authenticated as student-00-b21f8b16ab10@qwiklabs.net which is the active account specified by the [core/account] property.
- '@type': type.googleapis.com/google.rpc.ErrorInfo
 metadata:
 method: google.cloud.sql.v1beta4.SqlInstancesService.Get
 service: sqldadmin.googleapis.com
 reason: ACCESS_TOKEN_TYPE_UNSUPPORTED
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)\$ gcloud sql connect postgres81-yqk2i --user=postgres --quiet
Allowlisting your IP for incoming connection for 5 minutes...done.
Connecting to database with SQL user [postgres].Password:
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
Type "help" for help.
postgres=> █

```
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ gcloud sql connect postgres81-yqk2i --user=postgres --quiet
ERROR: (gcloud.sql.connect) UNAUTHENTICATED: Request had invalid authentication credentials. Expected OAuth 2 access token, login cookie or other valid authentication credential. See https://developers.google.com/identity/sign-in/web/devconsole-project. This command is authenticated as student-00-b21f8b16ab10
@qwiklabs.net which is the active account specified by the [core/account] property.
- '@type': type.googleapis.com/google.rpc.ErrorInfo
  metadata:
    method: google.cloud.sql.v1beta4.SqlInstancesService.Get
    service: sqladmin.googleapis.com
  reason: ACCESS_TOKEN_TYPE_UNSUPPORTED
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ gcloud sql connect postgres81-yqk2i --user=postgres --quiet
Allowlisting your IP for incoming connection for 5 minutes...done.
Connecting to database with SQL user [postgres].Password:
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
Type "help" for help.

postgres=> \c orders
Password:
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
You are now connected to database "orders" as user "postgres".
orders=> GRANT SELECT ON Table_Name TO "Qwiklabs_User_Account_Name";
ERROR: relation "table_name" does not exist
orders=> GRANT ALL PRIVILEGES ON TABLE users TO "student-00-b21f8b16ab10@qwiklabs.net";

\q
GRANT
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$
```

Create and Manage Cloud SQL for PostgreSQL Instances

https://partner.skills.google/course_templates/652/labs/564283

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completed successfully

Task 4. Configure and test point-in-time recovery

In this task you must configure point-in-time recovery on a Cloud SQL for PostgreSQL instance and then test it by using point-in-time recovery to create a cloned instance at a point in time that rolls back some changes.

To complete this task you must complete the following steps:

1. Enable backups on the Cloud SQL for PostgreSQL instance.
 - In the `postgres81-yqk2i` Cloud SQL instance, go to **Overview**. Click **edit** > **Data Protection**.
 - Enable point-in-time recovery and set the number of retained transaction log days to `6`.
2. Make a note of the timestamp for the point-in-time you wish to restore to using

Setup and requirements 60/100

Challenge scenario

Task 1. Migrate a stand-alone PostgreSQL database to a Cloud SQL for PostgreSQL instance

Task 2. Promote a Cloud SQL to be a stand-alone instance for reading and writing data

Task 3. Implement Cloud SQL for PostgreSQL IAM database authentication

Task 4. Configure and test point-in-time recovery

Congratulations!

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https://console.cloud.google.com/dbmigration/migrations/locations/us-east1/instances/dev23?authuser=0&project=qwiklabs-gcp-00-97850fa62d64... | 1

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Google Cloud qwiklabs-gcp-00-97850fa62d64 Search (/) for resources, docs, products, and more Search

Database Migration / Migration jobs / Migration job details: dev23

dev23 Edit Resume Stop Restart Promote Delete View logs

Migration job name: dev23
Status: Running
Phase: CDC
Source/Destination: PostgreSQL / Cloud PostgreSQL
Migration type: Continuous

Show all details

Databases Monitoring

2 Databases Refresh Restart failed data

Filter Enter property name or value

Promote migration job?

Promote disconnects the source from the destination, and promotes the destination to be a writeable instance. It's recommended to stop writes to the source, and to wait until the replication delay is at zero before initiating promote.

Cancel Promote

Name	Status	Phase	Errors	Replication delay
orders	Running	CDC	0 View details	0 B
postgres	Running	CDC	0 View details	0 B

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Overview – C | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/overview?authuser=0&project=qwiklabs-gcp-00-97850fa62d64&cloudshell=true | 2

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Google Cloud qwiklabs-gcp-00-97850fa62d64 Search (/) for resources, docs, products, and more Search

Cloud SQL Cloud SQL Overview Edit Import Export Restart Stop Delete Clone Migrate to AlloyDB

All instances > postgres81-yqk2i

postgres81-yqk2i PostgreSQL 14

This instance's backups settings don't follow your organization policy "Resource Location Restriction" Edit Settings

Learn the basics of Cloud SQL 0 of 3 completed

1 Import data With your Cloud SQL instance now running, the next step is to import data. You can import CSV and SQL files from your local file system or from a GCS bucket.

2 Query and explore data If you don't have existing data, you can [create a database](#), then create a table in Cloud SQL Studio in the next step.

3 Connect source application Import data Mark as complete

1 hour 6 hours 1 day 7 days 30 days Custom

Chart CPU utilization 40%

Release Notes

VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Backups – Cl... | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/backups?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64 | 3

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Cloud SQL Backups

Primary instance All instances > postgres81-yqk2i
✓ postgres81-yqk2i PostgreSQL 14

Settings Edit

Backup tier	Standard backup tier
Automated backups	Enabled
Backups window	10:47 AM – 2:47 PM (GMT+5:30)
Automated backups retained	7
Point-in-time recovery	Disabled
Location	Multi-region: default

+ Create backup

Backup Tier Standard Tier (currently active)

Filter Filter backups

Created	Type	Location	Description
...

CLOUD SHELL Terminal (qwiklabs-gcp-00-97850fa62d64) (qwiklabs-gcp-00-97850fa62d64) Open Editor

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Edit backups | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/backups?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64 | 3

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Cloud SQL Backups

All instances > postgres81-yqk2i
postgres81-yqk2i PostgreSQL 14

Settings Edit

Backup tier	Standard backup tier
Automated backups	Enabled
Backups window	10:47 AM – 2:47 PM (GMT+5:30)
Automated backups retained	7
Point-in-time recovery	Disabled
Location	Multi-region: default

+ Create backup

Backup Tier Standard Tier (currently active)

Filter Filter backups

Created	Type	Location
Now		

Save Cancel

Enhanced backup provides additional security for backups using Backup and DR service. Backup and DR service is a separate service from Cloud SQL with independent certifications and accreditation.

Compare Tiers

Standard backup tier Foundational protection with daily scheduling and PITR. [Learn more](#)

Automated backups and point-in-time recovery
Protect your data from loss at a minimal cost. Make sure your storage can support the automated backups and days of logs you're retaining. [Learn more](#)

Automated daily backups Daily backups are taken in the window of time selected. The operation may continue outside the window until complete.

Number of days * 7 Backup window 10:47 AM – 2:47 PM
Time is your local time zone (GMT+5:30)

Advanced options

Enable point-in-time recovery Allows you to recover data from a specific point in time, down to a fraction of a second, via write-ahead log archiving.

Enhanced backup tier **New** Enhanced protection with flexible scheduling and backup vault storage. [Learn more](#)

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Create and Manage Cloud SQL for PostgreSQL Instances > Create and Manage Cloud SQL for PostgreSQL Instances: Challenge Lab

Contents

Create and Manage Cloud SQL for PostgreSQL Instances

Open Google Cloud Console

Username: student-00-b21f8b16ab

Password: SDCMx936k1re

Project ID: qwiklabs-gcp-00-97850

PostgreSQL Migration User: import_admin

Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i

Database Table to be secured with IAM Authentication: users

To complete this task you must complete the following steps:

1. Enable backups on the Cloud SQL for PostgreSQL instance.
 - In the `postgres81-yqk2i` Cloud SQL instance, go to **Overview**. Click **edit** > **Data Protection**.
 - Enable point-in-time recovery and set the number of retained transaction log days to `6`.
2. Make a note of the timestamp for the point-in-time you wish to restore to using the following command.

```
date -u --rfc-3339=ns | sed -r 's/ /T/; s/\.(0-9){3}\.*\.\1Z/'
```
3. Make some changes to the database after this timestamp.

Setup and requirements 60/100

Challenge scenario

Task 1. Migrate a stand-alone PostgreSQL database to a Cloud SQL for PostgreSQL instance

Task 2. Promote a Cloud SQL to be a stand-alone instance for reading and writing data

Task 3. Implement Cloud SQL for PostgreSQL IAM database authentication

Task 4. Configure and test point-in-time recovery

Congratulations!

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Cloud SQL – +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/backups?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64 | 3

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Cloud SQL Backups

Primary instance All instances > postgres81-yqk2i
✓ postgres81-yqk2i PostgreSQL 14

Settings Edit

Backup tier	Standard backup tier
Automated backups	Enabled
Backups window	10:47 AM – 2:47 PM (GMT+5:30)
Automated backups retained	7
Point-in-time recovery	Enabled
Days of logs retained	6
Location	Multi-region: default

+ Create backup

Backup Tier Standard Tier (currently active) ▾

Filter Filter backups

Created Type

Instance is being updated X Open Editor

Uploads and qwiklabs-gcp-00-9785... operations

✓ Edited postgres81-yqk2i .	5:23:27 PM GMT+5
✓ Edited postgres81-yqk2i	5:05:53 PM GMT+5
✓ Edited postgres81-yqk2i	5:04:07 PM GMT+5

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Create and Manage Cloud SQL for PostgreSQL Instances > Create and Manage Cloud SQL for PostgreSQL Instances: Challenge Lab

Contents

Create and Manage Cloud SQL for PostgreSQL Inst

End Lab (Time limit: 00:38:11)

Open Google Cloud console

Username: student-00-b21f8b16ab

Password: SDCMx936k1re

Project ID: qwiklabs-gcp-00-97850

PostgreSQL Migration User: import_admin

Migrated Cloud SQL for PostgreSQL Instance ID

Setup and requirements (60/100)

Challenge scenario

Task 1. Migrate a stand-alone PostgreSQL database to a Cloud SQL for PostgreSQL instance

Task 2. Promote a Cloud SQL to be a stand-alone instance for reading and writing data

Task 3. Implement Cloud SQL for PostgreSQL IAM database authentication

Task 4. Configure and test point-in-time recovery

Congratulations!

1. Enable point-in-time recovery and set the number of retained transaction log days to 6.

2. Make a note of the timestamp for the point-in-time you wish to restore to using the following command.

```
date -u --rfc-3339=ns | sed -r 's/ /T/; s/\.(0-9){3}\.*\.\1Z/'
```

3. Make some changes to the database after this timestamp.

- In the `postgres81-yqk2i` Cloud SQL instance, go to **Overview**. Under **Connect to this instance**, click **Open Cloud Shell**.
- For the password enter `supersecret!`, then connect to the `orders` database using `\c orders;` command.
- Again, for the password, enter `supersecret!`.

You must add a row of data to the `orders.distribution_centers` table.

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Overview – +

<https://console.cloud.google.com/sql/instances/postgres81-yqk2i/overview?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64> |  3

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CLOUD SHELL Terminal (qwiklabs-gcp-00-97850fa62d64)   Open Editor 

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

```
ERROR: (gcloud.sql.connect) UNAUTHENTICATED: Request had invalid authentication credentials. Expected OAuth 2 access token, login cookie or other valid authentication credential. See https://developers.google.com/identity/sign-in/web/devconsole-project. This command is authenticated as student-00-b21f8b16ab10@qwiklabs.net which is the active account specified by the [core/account] property.
- '@type': type.googleapis.com/google.rpc.ErrorInfo
  metadata:
    method: google.cloud.sql.v1beta4.SqlInstancesService.Get
    service: sqldadmin.googleapis.com
    reason: ACCESS_TOKEN_TYPE_UNSUPPORTED
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ gcloud sql connect postgres81-yqk2i --user=postgres --quiet
Allowlisting your IP for incoming connection for 5 minutes...done.
Connecting to database with SQL user [postgres].Password:
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
Type "help" for help.

postgres=> \c orders
Password:
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
You are now connected to database "orders" as user "postgres".
orders=> GRANT SELECT ON Table_Name TO "Qwiklabs_User_Account_Name";
ERROR: relation "table_name" does not exist
orders=> GRANT ALL PRIVILEGES ON TABLE users TO "student-00-b21f8b16ab10@qwiklabs.net";

\q
GRANT
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ date -u --rfc-3339=ns | sed -r 's/ /T/; s/\.( [0-9]{3} )\.* /\.\1Z/' 
2025-12-18T11:55:01.895Z
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$
```

18°C 18°C Partly sunny   ENG IN 05:25 PM 18-12-2025

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/overview?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64 | 3

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Cloud SQL Overview Edit Import Export Restart Stop Delete Clone Migrate to AlloyDB

Primary instance

Overview Cloud SQL Studio System insights Query insights Connections Users Databases Backups Replicas Operations Release Notes

VPC network
Allocated IP range ⓘ 97850fa62d64/global/networks/default
Internal IP address 10.116.0.3 ⓘ
Public IP connectivity ⓘ Enabled
Public IP address 34.148.178.93 ⓘ
Outgoing IP address 104.196.192.6 ⓘ
Default TCP database port number 5432 ⓘ

Need help connecting?
Review the documentation to learn about the many ways to connect to your instance. [Learn more](#)

To connect using gcloud,
[Open Cloud Shell](#)

Service account

Located in us-east1-c
Not highly available (zonal)
Database flags and parameters
cloudsql.iam_authentication on
Vertex AI Integration is disabled
Database labels
goog-dms-instance : true
Edit configuration

Maintenance
Maintenance timing ⓘ Cloud SQL chooses the maintenance timing.
Maintenance window Updates may occur any day of the week.
Notifications Off

VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Overview – C | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/overview?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64 | 3

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Type "help" for help.

```
postgres=> \c orders
Password:
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
You are now connected to database "orders" as user "postgres".
orders=> GRANT SELECT ON Table Name TO "Qwiklabs_User_Account_Name";
ERROR: relation "table_name" does not exist
orders=> GRANT ALL PRIVILEGES ON TABLE users TO "student-00-b21f8b16ab10@qwiklabs.net";

\q
GRANT
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ date -u --rfc-3339=ns | sed -r 's/ /T/; s/\.( [0-9]{3} ).*/\.\1Z/'
2025-12-18T11:55:01.895Z
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ ^C
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ gcloud sql connect postgres81-yqk2i --user=postgres --quiet
Allowlisting your IP for incoming connection for 5 minutes...done.
Connecting to database with SQL user [postgres].Password:
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
Type "help" for help.

postgres=> \c orders
Password:
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
You are now connected to database "orders" as user "postgres".
orders=> █
```

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Overview – C | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/overview?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64 | 3

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```
Password:  
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)  
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)  
You are now connected to database "orders" as user "postgres".  
orders=> GRANT SELECT ON Table_Name TO "Qwiklabs_User_Account_Name";  
ERROR: relation "table_name" does not exist  
orders=> GRANT ALL PRIVILEGES ON TABLE users TO "student-00-b21f8b16ab10@qwiklabs.net";  
  
\q  
GRANT  
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ date -u --rfc-3339=ns | sed -r 's/ /T/; s/\.( [0-9]{3}).*/.\1Z/'  
2025-12-18T11:55:01.895Z  
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ ^C  
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ gcloud sql connect postgres81-yqk2i --user=postgres --quiet  
Allowlisting your IP for incoming connection for 5 minutes...done.  
Connecting to database with SQL user [postgres].Password:  
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)  
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)  
Type "help" for help.  
  
postgres=> \c orders  
Password:  
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)  
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)  
You are now connected to database "orders" as user "postgres".  
orders=> insert into distribution_centers values(-80.1918,25.7617,'Miami FL',11);  
\q  
INSERT 0 1  
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$
```

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Overview – C | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/overview?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64 | 3

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```
2025-12-18T11:55:01.895Z
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ ^C
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ gcloud sql connect postgres81-yqk2i --user=postgres --quiet
Allowlisting your IP for incoming connection for 5 minutes...done.
Connecting to database with SQL user [postgres].Password:
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SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
Type "help" for help.

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SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
You are now connected to database "orders" as user "postgres".
orders=> insert into distribution_centers values(-80.1918,25.7617,'Miami FL',11);
\q
INSERT 0 1
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ gcloud auth login --quiet

gcloud projects get-iam-policy $DEVSHELL_PROJECT_ID
Go to the following link in your browser, and complete the sign-in prompts:

https://accounts.google.com/o/oauth2/auth?response\_type=code&client\_id=32555940559.apps.googleusercontent.com&redirect\_uri=https%3A%2F%2F sdk.cloud.google.com%2F authcode.html&scope=openid+https%3A%2F%2F www.googleapis.com%2F auth%2F userinfo.email +https%3A%2F%2F www.googleapis.com%2F auth%2F cloud-platform +https%3A%2F%2F www.googleapis.com%2F auth%2F appengine.admin +https%3A%2F%2F www.googleapis.com%2F auth%2F sqlservice.login +https%3A%2F%2F www.googleapis.com%2F auth%2F compute +https%3A%2F%2F www.googleapis.com%2F accounts.reauth&state=wGVoahYHLz7PhuxDI7IkKgKMVRxLF7&prompt=consent&token\_usage=remote&access\_type=offline&code\_challenge=PSgn91uVukOedchWx4mmH84nKxLzKmWOKPR8sDt6W4&code\_challenge\_method=S256

Once finished, enter the verification code provided in your browser: □
```

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 Sign in with Google

Choose an account

to continue to [Google Cloud SDK](#)**student 129f2a59**

student-00-13837194859c@qwiklabs.net

Signed out

**student 09e0f489**

student-00-b21f8b16ab10@qwiklabs.net

[Use another account](#)

English (United States) ▾

[Help](#)[Privacy](#)[Terms](#)



Sign in to the gcloud CLI

You are seeing this page because you ran the following command in the gcloud CLI from this or another machine. If this is not the case, close this tab.

```
gcloud auth login --no-launch-browser
```

Enter the following verification code in gcloud CLI on the machine you want to log into. This is a credential **similar to your password** and should not be shared with others.

```
4/0ATX87lMJlz9YCFiWptcyN_q91urh81yUBq2  
7cuQTut34KaunInWb3p33gvCVIi1EAK0xUw
```

Verification Code Copied

You can close this tab when you're done.

VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Overview – C | gcloud CLI Remote Login | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/overview?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64 | 3

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```
2025-12-18T11:55:01.895Z
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ ^C
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ gcloud sql connect postgres81-yqk2i --user=postgres --quiet
Allowlisting your IP for incoming connection for 5 minutes...done.
Connecting to database with SQL user [postgres].Password:
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
Type "help" for help.

postgres=> \c orders
Password:
psql (16.11 (Ubuntu 16.11-1.pgdg24.04+1), server 14.20)
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off)
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orders=> insert into distribution_centers values(-80.1918,25.7617,'Miami FL',11);
\q
INSERT 0 1
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ gcloud auth login --quiet

gcloud projects get-iam-policy $DEVSHELL_PROJECT_ID
Go to the following link in your browser, and complete the sign-in prompts:

https://accounts.google.com/o/oauth2/auth?response_type=code&client_id=32555940559.apps.googleusercontent.com&redirect_uri=https%3A%2F%2F sdk.cloud.google.com%2F authcode.html&scope=openid+https%3A%2F%2F www.googleapis.com%2F auth%2F userinfo.email+https%3A%2F%2F www.googleapis.com%2F auth%2F cloud-platform+https%3A%2F%2F www.googleapis.com%2F auth%2F appengine.admin+https%3A%2F%2F www.googleapis.com%2F auth%2F sqlservice.login+https%3A%2F%2F www.googleapis.com%2F auth%2F compute+https%3A%2F%2F www.googleapis.com%2F auth%2F accounts.reauth&state=wGVoahYHLz7PhuxDI7IkKgKMVRxLF7&prompt=consent&token_usage=remote&access_type=offline&code_challenge=PSgn9luVuk0edchWx4mmH84nKxLzKmWOKPR8sDt6W4&code_challenge_method=S256

Once finished, enter the verification code provided in your browser: 4/0ATX87lMJIz9YCFiWptcyN_q91urh81yUBq27cuQTut34KaunInWb3p33gvCVIi1EAKOxUw
```

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VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Overview – C | gcloud CLI Remote Login | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/overview?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64 | 3

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```
role: roles/cloudsql.instanceUser
- members:
  - serviceAccount:service-1015244486798@compute-system.iam.gserviceaccount.com
  role: roles/compute.serviceAgent
- members:
  - serviceAccount:service-1015244486798@gcp-sa-datamigration.iam.gserviceaccount.com
  role: roles/datamigration.serviceAgent
- members:
  - serviceAccount:1015244486798-compute@developer.gserviceaccount.com
  - serviceAccount:1015244486798@cloudservices.gserviceaccount.com
  - user:student-00-b21f8b16ab10@qwiklabs.net
  role: roles/editor
- members:
  - serviceAccount:admiral@qwiklabs-services-prod.iam.gserviceaccount.com
  - serviceAccount:qwiklabs-gcp-00-97850fa62d64@qwiklabs-gcp-00-97850fa62d64.iam.gserviceaccount.com
  - user:student-00-b21f8b16ab10@qwiklabs.net
  role: roles/owner
- members:
  - serviceAccount:service-1015244486798@service-networking.iam.gserviceaccount.com
  role: roles/servicenetworking.serviceAgent
- members:
  - serviceAccount:qwiklabs-gcp-00-97850fa62d64@qwiklabs-gcp-00-97850fa62d64.iam.gserviceaccount.com
  role: roles/storage.admin
- members:
  - user:student-00-b21f8b16ab10@qwiklabs.net
  role: roles/viewer
etag: BwZGOFyGsx4=
version: 1
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$
```

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```
GRANT ALL PRIVILEGES ON TABLE users TO "student-00-b21f8b16ab10@qwiklabs.net";
```

```
\q
```

```
2025-12-18T11:55:01.895Z
```

```
gcloud sql instances clone $INSTANCE_ID postgres-orders-pitr --point-in-time 'CHANGE_TIMESTAMP'
```



```
GRANT ALL PRIVILEGES ON TABLE users TO "student-00-b21f8b16ab10@qwiklabs.net";
```

```
\q
```

2025-12-18T11:55:01.895Z

```
gcloud sql instances clone $INSTANCE_ID postgres-orders-pitr --point-in-time  
'2025-12-18T11:55:01.895Z'
```



VM instances – Compute Engine – qv | Create a migration job – Database M... | postgres81-yqk2i – Overview – C | +

https://console.cloud.google.com/sql/instances/postgres81-yqk2i/overview?authuser=0&cloudshell=true&project=qwiklabs-gcp-00-97850fa62d64 | 3

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```
- members:
  - serviceAccount:admiral@qwiklabs-services-prod.iam.gserviceaccount.com
  - serviceAccount:qwiklabs-gcp-00-97850fa62d64@qwiklabs-gcp-00-97850fa62d64.iam.gserviceaccount.com
  - user:student-00-b21f8b16ab10@qwiklabs.net
  role: roles/owner
- members:
  - serviceAccount:service-1015244486798@service-networking.iam.gserviceaccount.com
  role: roles/servicenetworking.serviceAgent
- members:
  - serviceAccount:qwiklabs-gcp-00-97850fa62d64@qwiklabs-gcp-00-97850fa62d64.iam.gserviceaccount.com
  role: roles/storage.admin
- members:
  - user:student-00-b21f8b16ab10@qwiklabs.net
  role: roles/viewer
etag: BwZGOFyGsx4=
version: 1
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ export INSTANCE_ID=postgres81-yqk2i
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$ gcloud sql instances clone $INSTANCE_ID postgres-orders-pitr --point-in-time '2025-12-18T11:55:01.895Z'
Cloning Cloud SQL instance...done.
Created [https://sqladmin.googleapis.com/sql/v1beta4/projects/qwiklabs-gcp-00-97850fa62d64/instances/postgres-orders-pitr].
NAME: postgres-orders-pitr
DATABASE_VERSION: POSTGRES_14
LOCATION: us-east1-c
TIER: db-custom-2-8192
PRIMARY_ADDRESS: 35.231.237.237
PRIVATE_ADDRESS: 10.116.0.5
STATUS: RUNNABLE
student_00_b21f8b16ab10@cloudshell:~ (qwiklabs-gcp-00-97850fa62d64)$
```

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Create and Manage Cloud SQL for PostgreSQL Instances

https://partner.skills.google/course_templates/652/labs/564283

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Create and Manage Cloud SQL for PostgreSQL Instances > Create and Manage Cloud SQL for PostgreSQL Instances: Challenge Lab

Contents

Create and Manage Cloud SQL for PostgreSQL Instances

STUDENT-00-D21101000

Password: SDcMx936k1re

Project ID: qwiklabs-gcp-00-97850

PostgreSQL Migration User: import_admin

Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i

Database Table to be secured with IAM Authentication: users

Point-in-time recovery retention days: 6

5. Create a new user on the stand-alone PostgreSQL installation on the `postgres-vm` virtual machine with the following user name and password:

- **Migration user name:** `import_admin`
- **Migration user password:** `DMS_1s_cool!`

6. Grant that user the required privileges and permissions for databases to be migrated.

Database Migration Services require that the migration user has privileges to specific schemata and relations of the target databases for migration, in this case that is the `orders` database.

The Database Migration Service requires all tables to be migrated to have a primary key.

7. Make sure that all of the tables in the `orders` database have a primary key set before you start the migration.

- `distribution_centers`
- `inventory_items`

Setup and requirements 80/100

Challenge scenario

Task 1. Migrate a stand-alone PostgreSQL database to a Cloud SQL for PostgreSQL instance

Task 2. Promote a Cloud SQL to be a stand-alone instance for reading and writing data

Task 3. Implement Cloud SQL for PostgreSQL IAM database authentication

Task 4. Configure and test point-in-time recovery

Congratulations!

Previous Next

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Create and Manage Cloud SQL for PostgreSQL Instances > Create and Manage Cloud SQL for PostgreSQL Instances: Challenge Lab

Contents

Create and Manage Cloud SQL for PostgreSQL Instances

STUDENT-DATABASE-TO-MIGRATE

- Password: SDCmX936k1re
- Project ID: qwiklabs-gcp-00-97850
- PostgreSQL Migration User: import_admin
- Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i
- Database Table to be secured with IAM Authentication: users
- Point-in-time recovery retention days: 6

Database Migration Services require that the migration user has privileges to specific schemata and relations of the target databases for migration, in this case that is the `orders` database.

The Database Migration Service requires all tables to be migrated to have a primary key.

7. Make sure that all of the tables in the `orders` database have a primary key set before you start the migration.

- `distribution_centers`
- `inventory_items`
- `order_items`
- `products`
- `users`

Note: The detailed prerequisites for migrating a stand-alone PostgreSQL database to Cloud SQL for PostgreSQL are provided in the suggestion links in the Cloud Console GUI for Database Migration Services.

Setup and requirements 80/100

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Password: SDcMx936k1re

Project ID: qwiklabs-gcp-00-97850

PostgreSQL Migration User: import_admin

Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i

Database Table to be secured with IAM Authentication: users

Point-in-time recovery retention days: 6

Migrate the stand-alone PostgreSQL database to a Cloud SQL for PostgreSQL instance

To perform the migration using Database Migration Services, complete the following steps:

1. Create a new Database Migration Service connection profile for the stand-alone PostgreSQL database, using the credentials of the `import_admin` migration user you created earlier.
 - Username: `import_admin`
 - Password: `DMS_1s_cool!`
 - Region must be set to `us-east1`
2. Configure the connection profile using the internal ip-address of the source compute instance.

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Task 2. Promote a Cloud SQL to be a stand-alone instance for reading and writing data

- In this task, you must complete the migration by promoting the Cloud SQL for PostgreSQL instance to a stand-alone instance.

When the promotion is complete, the status of the job updates to *Completed*.

Promote a Cloud SQL Migration Replica to a stand-alone instance.

Check my progress Step Completed!

Task 3. Implement Cloud SQL for

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PostgreSQL Migration User: import_admin

Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i

Database Table to be secured with IAM Authentication: users

Point-in-time recovery retention days: 6

Task 3. Implement Cloud SQL for PostgreSQL IAM database authentication

In this task you must configure the newly migrated Cloud SQL for PostgreSQL instance to support Cloud IAM users and IAM database authentication. You must also patch the Cloud SQL for PostgreSQL instance to add the public IP address of the `postgres-vm` virtual machine to the list of networks that are allowed to connect to the instance.

- Patch the `postgres81-yqk2i` Cloud SQL instance to allow connections from the public ip-address of the `postgres-vm` virtual machine.
 - In the `postgres81-yqk2i` Cloud SQL instance, go to **connections > Networking**.
 - Under the **Public IP**, click **ADD A NETWORK**. For the network, use the external IP of the `postgres-vm` virtual machine.
- In the `postgres81-yqk2i` Cloud SQL instance, create a Cloud SQL IAM user

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VIRTUAL MACHINE TO THE LIST OF NETWORKS THAT ARE ALLOWED TO CONNECT TO THE INSTANCE.

1. Patch the **postgres81-yqk2i** Cloud SQL instance to allow connections from the public ip-address of the **postgres-vm** virtual machine.

- In the **postgres81-yqk2i** Cloud SQL instance, go to **connections > Networking**.
- Under the **Public IP**, click **ADD A NETWORK**. For the network, use the external IP of the **postgres-vm** virtual machine.

2. In the **postgres81-yqk2i** Cloud SQL instance, create a Cloud SQL IAM user using the lab student ID, **student-00-b21f8b16ab10@qwiklabs.net**, as the principal account name.

- Click **Users > Add user account**, then select **Cloud IAM**.

3. Grant **SELECT** permission to the Cloud IAM user for the **users** table.

- In the **postgres81-yqk2i** Cloud SQL instance, go to **Overview**. Under

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external IP of the postgres-vm virtual machine.

2. In the **postgres81-yqk2i** Cloud SQL instance, create a Cloud SQL IAM user using the lab student ID, **student-00-b21f8b16ab10@qwiklabs.net**, as the principal account name.

- Click **Users > Add user account**, then select **Cloud IAM**.

3. Grant **SELECT** permission to the Cloud IAM user for the **users** table.

- In the **postgres81-yqk2i** Cloud SQL instance, go to **Overview**. Under **Connect to this instance**, click **Open Cloud Shell**.
- For the password enter **supersecret!**. Then connect to the **orders** database using **\c orders;** command.
- Again for the password enter **supersecret!**.
- Use the following command to grant **SELECT** permission. Replace the **Table_Name** and **Qwiklabs_User_Account_Name** variables with the

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- Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i
- Database Table to be secured with IAM Authentication: users
- Point-in-time recovery retention days: 6

In the `postgres81-yqk2i` Cloud SQL instance, go to **Overview**. Under **Connect to this instance**, click **Open Cloud Shell**.

For the password enter `supersecret!`. Then connect to the `orders` database using `\c orders;` command.

Again for the password enter `supersecret!`.

Use the following command to grant SELECT permission. Replace the **Table_Name** and **Qwiklabs_User_Account_Name** variables with the correct values.

```
GRANT SELECT ON Table_Name TO "Qwiklabs_User_Account_Name";
```

Run the following query as the `student-00-b21f8b16ab10@qwiklabs.net` user in the migrated database to confirm that `student-00-b21f8b16ab10@qwiklabs.net` can select data from the `users` table.

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PostgreSQL Migration User: import_admin

Migrated Cloud SQL for PostgreSQL Instance ID: postgres81-yqk2i

Database Table to be secured with IAM Authentication: users

Point-in-time recovery retention days: 6

GRANT SELECT ON table_name TO "Qwiklabs_User_Account_Name";

4. Run the following query as the student-00-b21f8b16ab10@qwiklabs.net user in the migrated database to confirm that student-00-b21f8b16ab10@qwiklabs.net can select data from the users table.

5. SELECT COUNT(*) FROM users;

Secure a Cloud SQL for PostgreSQL database table using Cloud IAM database authentication.

Check my progress

Congratulations! Cloud SQL IAM database authentication configuration completed successfully

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Variables with the correct values.

gcloud sql instances clone \$CLOUDSQL_INSTANCE
\$NEW_INSTANCE_NAME \
--point-in-time \$TIME_STAMP

- For the **Cloned instance name** you must use the name `postgres-orders-pitr`.

The new instance will not be used, but do not discard it, as it will be required to confirm that you have correctly completed the lab.

Note: You must specify the point-in-time recovery timestamp in UTC time, specified in RFC 3339 format 'yyyy-MM-ddThh:mm:ss.mmmZ'.

Enable and test point-in-time recovery.

Check my progress

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Congratulations!

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