

Exercise: Deploy a Postgres database using Cloud SQL

In this exercise, you will:

- Navigate to the Cloud SQL console page
- Select the option to create a PostgreSQL database
- Specify instance information such as name and password
- Choose development configuration
- Specify single zone availability and choose a zone
- View customization options

Navigate to the Cloud SQL console page to display a page listing something like Figure 1.

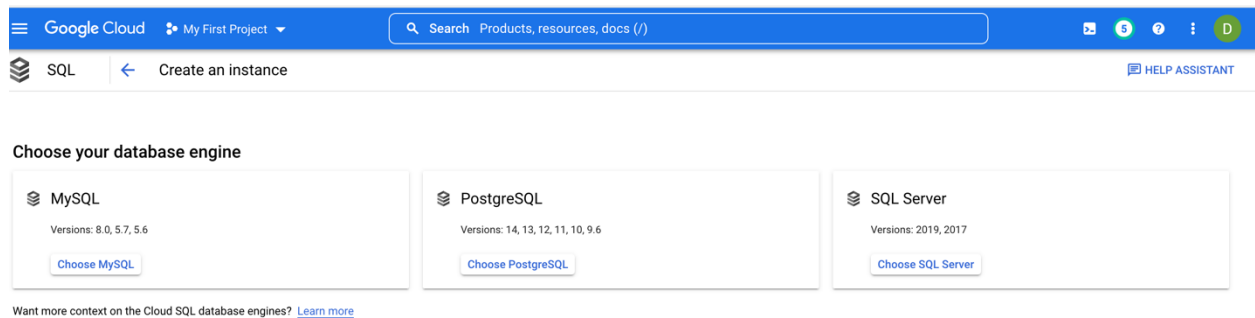


Figure 1. The Cloud SQL Console page lists the three types of databases supported in Cloud SQL

Click on PostgreSQL to begin creating a PostgreSQL database instance. This will bring up a page like Figure 2.

Create a PostgreSQL instance

Instance info

Instance ID *

Use lowercase letters, numbers, and hyphens. Start with a letter.

Password *

GENERATE

Set a password for the default admin user "postgres". [Learn more](#)

▼

PASSWORD POLICY

Database version *

PostgreSQL 14

Choose a configuration to start with

These suggested configurations will pre-fill this form as a starting point for creating an instance. You can customize as needed later.

Production

Optimized for the most critical workloads. Highly available, performant, and durable.

Development

Performant but not highly available, while reducing cost by provisioning less compute and storage.

▼

CONFIGURATION DETAILS

Summary

Region	us-central1 (Iowa)
DB Version	PostgreSQL 14
vCPUs	4 vCPU
Memory	26 GB
Storage	100 GB
Network throughput (MB/s) ?	1,000 of 2,000
Disk throughput (MB/s) ?	Read: 48.0 of 240.0 Write: 48.0 of 240.0
IOPS ?	Read: 3,000 of 15,000 Write: 3,000 of 15,000
Connections	Public IP
Backup	Automated
Availability	Multiple zones (Highly available)
Point-in-time recovery	Enabled

Figure 2. The start of the Create Instance dialog for a PostgreSQL

Specify a name for the instance and a password. Choose a version of PostgreSQL, version 14 is the default. Choose the development configuration for this exercise. Expand Configuration Details to see the differences between production and development configurations. (See Figure 3).

Choose a configuration to start with

These suggested configurations will pre-fill this form as a starting point for creating an instance. You can customize as needed later.

- ☒ Production
Optimized for the most critical workloads. Highly available, performant, and durable.
- ☐ Development
Performant but not highly available, while reducing cost by provisioning less compute and storage.

	Production	Development
Availability	Highly Available	Single Zone
vCPU	4	2
Memory	26 GiB	8 GiB
Storage	100 GiB	100 GiB
Automatic storage increases	Enabled	Enabled
Automated backups	Enabled	Enabled
Point-in-time recovery	Enabled	Enabled
Maintenance order	Later	Any

[^ COLLAPSE DETAILS](#)

Figure 3. Comparison of production and development configurations.

Next, choose a region and single zone availability. You can specify a specific zone or choose the default. (See Figure 4).

Choose region and zonal availability

For better performance, keep your data close to the services that need it. Region is permanent, while zone can be changed any time.

Region

us-central1 (Iowa) ▼

Zonal availability

☐ Single zone

In case of outage, no failover. Not recommended for production.

☒ Multiple zones (Highly available)

Automatic failover to another zone within your selected region. Recommended for production instances. Increases cost.

▼ SPECIFY ZONES

Figure 4. Region and zone specifications.

Next, view the different options for machine type, storage, connections, data protection, maintenance, flags, query insights, and labels (Figures 6-10). Choose the default options for all.

Customize your instance

You can also customize instance configurations later

Machine type

Machine has 4 vCPUs and 26 GB of memory.



Storage

Storage type is SSD. Storage size is 100 GB, and will automatically scale as needed.

Google-managed key enabled (most common).



Connections

Public IP enabled



Data Protection

Automatic backups enabled. Point-in-time recovery (via write-ahead logs) enabled.

Instance deletion protection enabled.



Maintenance

Updates may occur any day of the week. Maintenance timing set to 'Later.'



Flags

No flags set.



Query insights

Query insights disabled



Labels

No labels set



Figure 5. Options for further customizing the database instance.

Machine type



Machine Type

Choose a preset or customize your own. For better performance, choose a machine type with enough memory to hold your largest table.

High memory ▼

- ☒ 4 vCPU, 26 GB
- ☐ 8 vCPU, 52 GB
- ☐ 16 vCPU, 104 GB
- ☐ Custom

Figure 6. Machine type options.

Storage



Storage type

Choice is permanent. Storage type affects performance.

☒ SSD (Recommended)

Most popular choice. Lower latency than HDD with higher QPS and data throughput.

☐ HDD

Lower performance than SSD with lower storage rates.

Storage capacity

10 - 65,536 GB. Higher capacity improves performance, up to the limits set by the machine type. Capacity can't be decreased later.

☐ 10 GB

☐ 20 GB

☒ 100 GB

☐ 200 GB

☐ Custom

☒ Enable automatic storage increases

If enabled, whenever you are nearing capacity, storage will be incrementally (and permanently) increased. [Learn more](#)

Figure 7. Storage options

Connections

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. Can't be disabled once enabled. [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](#)



You have not authorized any external networks to connect to your Cloud SQL instance. External applications can still connect to the instance through the Cloud SQL Proxy. [Learn more](#)

[ADD 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](#)

Figure 8. Connection options

Data Protection



Automated backups and point-in-time recovery

Protect your data from loss at a minimal cost. [Learn more](#)



Automate backups

Choose a window of time for your data to be automatically backed up, which may continue outside the window until complete. Time is your local time zone (UTC-8).

12:00 PM — 4:00 PM



▼ 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.

▼ ADVANCED OPTIONS

Instance deletion protection

Safeguard against accidental deletion and data loss. [Learn more](#)



Enable deletion protection

If enabled, this instance won't be able to be deleted until this feature is disabled

Figure 9. Data Protection options

Maintenance

Maintenance typically only takes place once every few months, and requires your instance to be restarted while updates are made, which disrupts service briefly

Maintenance window

Choose the best day and time window for this instance to undergo routine maintenance.

Any window 

Order of update

Relative to other instances in this region

Any 

Figure 10. Maintenance Options

Click Create Instance (Figure 11) to create the database instance and return to the Cloud SQL console to see the database listed.

Customize your instance

You can also customize instance configurations later

 **SHOW CONFIGURATION OPTIONS**

CREATE INSTANCE

CANCEL

Figure 11. Create Instance or Cancel options

After verifying the database is created, delete the instance.