

[MySQL](#) (/sql/docs/mysql/connect-compute-engine) | **PostgreSQL** | [SQL Server](#)

This page describes how to use the psql client, installed on a Compute Engine instance, to connect to Cloud SQL.

You can use private IP, public IP, the Cloud SQL Proxy, or the proxy Docker image.

Before you can connect to your Cloud SQL instance, you must have a default database user (postgres) on the instance.

This task does not include instructions for setting up your Compute Engine instance. If you need help with creating and configuring a Compute Engine instance, see the [Compute Engine documentation](#) (/compute/docs/instances/create-start-instance).

To connect to Cloud SQL from a Compute Engine instance using private IP, private services access must be set up for your environment and your Cloud SQL instance must be configured to use private IP. Your Compute Engine instance must be in the same region as your Cloud SQL instance, and on the network configured for a private connection. [Learn more](#) (/sql/docs/postgres/configure-private-ip).

1. Configure your instance to use private IP, using the instructions in [Configuring Private IP Connectivity](#) (/sql/docs/postgres/configure-private-ip).

2. Open a terminal connection to your Compute Engine instance.

Use the appropriate instructions, depending on the instance's operating system:

- For Linux, see [Connecting to Linux Instances](#) (/compute/docs/instances/connecting-to-instance#gcetools).
- For Windows, see [Connecting to Windows Instances](#) (/compute/docs/instances/connecting-to-instance#windows).

3. Install the psql client on the Compute Engine instance, if it is not already installed.

4. Connect with the psql client.

1. Add a static IPv4 IP address to the Compute Engine instance, if it does not already have one. You cannot connect to Compute Engine using IPv6. For information about adding a static IP address, see [Reserving a new static external IP address](/compute/docs/configure-instance-ip-addresses#reserve_new_static_external_ip_address) (/compute/docs/configure-instance-ip-addresses#reserve_new_static) in the Compute Engine documentation.
2. Authorize the static IP address of the Compute Engine instance as a network that can connect to your Cloud SQL instance.
For more information, see [Configuring access for IP connections](/sql/docs/postgres/connect-external-app#appaccessIP) (/sql/docs/postgres/connect-external-app#appaccessIP).

⚠ Note: You should grant authorization only for *static* IP addresses. Ephemeral IP addresses are temporary; granting them access to your instance creates a security risk because they could be reassigned to a different Compute Engine user later.

3. Open a terminal connection to your Compute Engine instance.

Use the appropriate instructions, depending on the instance's operating system:

- For Linux, see [Connecting to Linux Instances](/compute/docs/instances/connecting-to-instance#gcetools) (/compute/docs/instances/connecting-to-instance#gcetools).
- For Windows, see [Connecting to Windows Instances](/compute/docs/instances/connecting-to-instance#windows) (/compute/docs/instances/connecting-to-instance#windows)

4. Install the psql client on the Compute Engine instance, if it is not already installed.

5. Connect with the psql client.

Run the following gcloud command to find the CLOUD_SQL_PUBLIC_IP_ADDR:

For an example of how to connect using SSL, see [Connecting with SSL](#) (/sql/docs/postgres/connect-admin-ip#connect-ssl).

6. You should see the psql prompt.

Need help? For help troubleshooting the proxy, see [Troubleshooting Cloud SQL Proxy connections](#) (/sql/docs/postgres/sql-proxy#troubleshooting). Or, see our [Cloud SQL Support page](#) (/sql/docs/postgres/support).

1. Enable the Cloud SQL Admin API.

[Enable the API](https://console.cloud.google.com/flows/enableapi?apiid=sqladmin&redirect=https://console.cloud.google.com) (https://console.cloud.google.com/flows/enableapi?apiid=sqladmin&redirect=https://console.cloud.google.com)

2. Create a service account for the proxy.

★ **Note:** If your Compute Engine instance has either the **Full API access** or **Cloud SQL API** scope, you can skip this step; you do not need to provide a certificate file when you start the proxy.

★ **Note:** To create a service account with the required permissions, you must have `resourcemanager.projects.setIamPolicy` permission. This permission is included in the Project Owner, Project IAM Admin, and Organization Administrator roles. You must also have enabled the Cloud SQL Admin API.

When you use a service account to provide the credentials for the proxy, you must create it with sufficient permissions. If you are using the finer-grained Identity Access and Management (IAM) roles to manage your Cloud SQL permissions, you must give the service account a role that includes the `cloudsql.instances.connect` permission. The predefined Cloud SQL roles that include this permission are:

- Cloud SQL Client
- Cloud SQL Editor
- Cloud SQL Admin

If you are using the legacy project roles (Viewer, Editor, Owner), the service account must have at least the Editor role.

a. Go to the **Service accounts** page of the Google Cloud Console.

[Go to the Service accounts page](https://console.cloud.google.com/iam-admin/serviceaccounts/) (https://console.cloud.google.com/iam-admin/serviceaccounts/)

b. Select the project that contains your Cloud SQL instance.

c. Click **Create service account**.

d. In the **Create service account** dialog, provide a descriptive name for the service account.

e. For **Role**, select one of the following roles:

- **Cloud SQL > Cloud SQL Client**
- **Cloud SQL > Cloud SQL Editor**
- **Cloud SQL > Cloud SQL Admin**

Alternatively, you can use the primitive Editor role by selecting **Project > Editor**, but the Editor role includes permissions across Google Cloud.

If you do not see these roles, your Google Cloud user might not have the `resourceManager.projects.setIamPolicy` permission. You can check your permissions by going to the [IAM page](https://console.cloud.google.com/iam-admin) (<https://console.cloud.google.com/iam-admin>) in the Google Cloud Console and searching for your user id.

- Change the **Service account ID** to a unique, easily recognizable value.
- Click **Furnish a new private key** and confirm that the key type is JSON.
- Click **Create**.

The private key file is downloaded to your machine. You can move it to another location. Keep the key file secure.

3. If the Compute Engine instance is in a different project than the Cloud SQL instance, ensure that its service account has the proper permissions in the project that contains the Cloud SQL instance:

- Go to the Compute Engine instances listing in the Google Cloud Console.
[Go to the Compute Engine instances listing](https://console.cloud.google.com/compute/instances) (<https://console.cloud.google.com/compute/instances>)
- If needed, select the project associated with the Compute Engine instance.
- Select the Compute Engine instance to display its properties.
- In the Compute Engine instance properties, copy the name of the service account.
- Go to the **IAM & Admin Projects** page in the Google Cloud Console.
[Go to the IAM & Admin Projects page](https://console.cloud.google.com/iam-admin/iam/project) (<https://console.cloud.google.com/iam-admin/iam/project>)
- Select the project that contains the Cloud SQL instance.
- Search for the service account name.
- If the service account is already there, and it has a role that includes the `cloudsql.instances.connect` permission, you can proceed to [step 4](#) (#open-terminal).

The `Cloud SQL Client`, `Cloud SQL Editor` and `Cloud SQL Admin` roles all provide the necessary permission, as do the legacy `Editor` and `Owner` project roles.

- Otherwise, add the service account by clicking **Add**.
- In the **Add members** dialog, provide the name of the service account and select a role that include the `cloudsql.instances.connect` permission (any Cloud SQL predefined role other than Viewer will work).

Alternatively, you can use the primitive Editor role by selecting **Project > Editor**, but the Editor role includes permissions across Google Cloud.

If you do not see these roles, your Google Cloud user might not have the `resourceManager.projects.setIamPolicy` permission. You can check your permissions by going to the [IAM page](https://console.cloud.google.com/iam-admin) (<https://console.cloud.google.com/iam-admin>) in the Google Cloud Console and searching for your user id.

k. Click **Add**.

You should now see the service account listed with the specified role.

4. Open a terminal connection to your Compute Engine instance.

Use the appropriate instructions, depending on the instance's operating system:

- For Linux, see [Connecting to Linux Instances](/compute/docs/instances/connecting-to-instance#gcetools) (</compute/docs/instances/connecting-to-instance#gcetools>).
- For Windows, see [Connecting to Windows Instances](/compute/docs/instances/connecting-to-instance#windows) (</compute/docs/instances/connecting-to-instance#windows>).

5. If your Compute Engine instance is running either an RHEL or a CentOS public image, SELinux might block the proxy connection. If this happens, you must configure the SELinux feature to allow the connection.

For more information about SELinux for RHEL, see [the RHEL documentation](https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/7/html/selinux_users_and_administrators_guide/index)

(https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/7/html/selinux_users_and_administrators_guide/index)

. For more information about SELinux for CentOS, see [the CentOS documentation](https://wiki.centos.org/HowTos/SELinux)

(<https://wiki.centos.org/HowTos/SELinux>).

6. Install the psql client on the Compute Engine instance, if it is not already installed.

7. Install the Cloud SQL Proxy on the Compute Engine instance.

If your operating system isn't included here, you can also [compile the proxy from source](http://github.com/GoogleCloudPlatform/cloudsql-proxy) (<http://github.com/GoogleCloudPlatform/cloudsql-proxy>).

8. Start the proxy.

★ **Note:** If your Compute Engine instance has either the **Full API access** or **Cloud SQL API** scope, you do not need to provide a certificate file when you start the proxy.

Depending on your language and environment, you can start the proxy using either TCP sockets or Unix sockets.

9. Start the psql session.

The connection string you use depends on whether you started the proxy using a TCP socket or a UNIX socket.

Need help? For help troubleshooting the proxy, see [Troubleshooting Cloud SQL Proxy connections](/sql/docs/postgres/sql-proxy#troubleshooting) (/sql/docs/postgres/sql-proxy#troubleshooting). Or, see our [Cloud SQL Support page](/sql/docs/postgres/support) (/sql/docs/postgres/support).

- Get help [troubleshooting connection issues](/sql/docs/postgres/sql-proxy#troubleshooting) (/sql/docs/postgres/sql-proxy#troubleshooting) for the Cloud SQL Proxy.
- Create [users](/sql/docs/postgres/create-manage-users) (/sql/docs/postgres/create-manage-users) and [databases](/sql/docs/postgres/create-manage-databases) (/sql/docs/postgres/create-manage-databases).
- Learn more about [private IP](/sql/docs/postgres/private-ip) (/sql/docs/postgres/private-ip).
- Learn about [options for connecting to your instance from your application](/sql/docs/postgres/external-connection-methods) (/sql/docs/postgres/external-connection-methods).
- Learn about [the psql client](https://www.postgresql.org/docs/9.6/static/app-psql.html) (https://www.postgresql.org/docs/9.6/static/app-psql.html).
- Learn about [options for support](/sql/docs/support) (/sql/docs/support).