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[MySQL](https://cloud.google.com/sql/docs/mysql/) (https://cloud.google.com/sql/docs/mysql/) [Guides](#)

Enabling and disabling high availability on an instance

MySQL | [PostgreSQL](https://cloud.google.com/sql/docs/postgres/configure-ha) (https://cloud.google.com/sql/docs/postgres/configure-ha) | [SQL Server](https://cloud.google.com/sql/docs/sqlserver/configure-ha) (https://cloud.google.com/sql/docs/sqlserver/configure-ha)

This page describes how to configure a Second Generation instance for high availability.

You can configure an instance for high availability when you create the instance, or you can enable high availability on an existing instance.

For more information about the high availability configuration, see [Overview of the High Availability Configuration](https://cloud.google.com/sql/docs/mysql/high-availability) (https://cloud.google.com/sql/docs/mysql/high-availability).

Creating a new instance configured for high availability

When you create an instance, and you configure it for high availability, Cloud SQL creates the instance as a regional instance.

To create an instance configured for high availability:

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1. Go to the Cloud SQL Instances page in the Google Cloud Console.

[GO TO THE CLOUD SQL INSTANCES PAGE](https://console.cloud.google.com/sql/instances) (HTTPS://CONSOLE.CLOUD.GOOGLE.COM/SQL/INSTANC

2. Create an instance.
3. On the **Instance ID** page, select **Show configuration options**.
4. Open **Auto backups and high availability**.
5. Select the **High availability (regional)** checkbox.

★ Leave the **Automate backups** and **Enable binary logging** checkboxes enabled.

For more details about creating an instance, see [Creating Instances](https://cloud.google.com/sql/docs/mysql/create-instance) (<https://cloud.google.com/sql/docs/mysql/create-instance>).

Legacy configuration: Creating a new instance configured for high availability

When you create an instance, you can configure it for high availability; Cloud SQL creates the failover replica at the same time that it creates the master.

To create an instance configured for high availability:

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1. Create the master instance and its failover replica:

```
gcloud sql instances create [MASTER_INSTANCE_NAME] \  
    --backup-start-time [BACKUP_WINDOW_START_TIME] \  
    --failover-replica-name [FAILOVER_REPLICA_NAME] \  
    --tier [MACHINE_TYPE] --enable-bin-log
```

The backup window start time is in the format `HH:MM`.

For a complete list of available parameters, see the [gcloud sql instances create](https://cloud.google.com/sdk/gcloud/reference/sql/instances/create) (<https://cloud.google.com/sdk/gcloud/reference/sql/instances/create>) reference page.

2. Configure the root user on the master:

```
gcloud sql users set-password root --host=% \  
    --instance [MASTER_INSTANCE_NAME] --password [PASSWORD]
```

The failover replica is created with the same machine type (tier) as the master instance. You can change the failover replica's machine type later, but it must be at least as large as the master instance.

Configuring an existing instance for high availability

Configuring an existing instance for high availability causes a few minutes of downtime while the instance is reconfigured.

To configure an existing instance for high availability:

CONSOLE GCLOUD CURL

1. Go to the Cloud SQL Instances page in the Google Cloud Console.
GO TO THE CLOUD SQL INSTANCES PAGE ([HTTPS://CONSOLE.CLOUD.GOOGLE.COM/SQL/INSTANCES](https://console.cloud.google.com/sql/instances))
2. Click the instance name to open its **Overview** page.
3. Click **Edit**.
4. Under the **Auto backups and high availability** configuration option section, select the **Automate backups**, **Enable binary logging**, and **High availability (regional)** checkboxes.
5. Click **Save**.

You are returned to the instance page for the master while the instance is updated.

Legacy configuration: Configuring an existing instance for high availability

Configuring an existing instance for high availability causes a few minutes of downtime while the instance is reconfigured.

To configure an existing instance for high availability:

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1. Check the status of the master instance:

```
gcloud sql instances describe [MASTER_INSTANCE_NAME]
```

If the `databaseReplicationEnabled` property is `true`, the instance is a replica; you cannot create a failover replica for a replica.
2. If the `enabled` property under `backupConfiguration` is `false`, enable backups for the master instance now:

```
gcloud sql instances patch [MASTER_INSTANCE_NAME] --backup-start-time [HH:MM]
```

The `backup-start-time` parameter is specified in 24-hour time, in the UTC±00 time zone, and specifies the start of a 4-hour backup window. Backups can start any time during the backup window.

3. If the `binaryLogEnabled` property is `false`, enable binary logs:

```
gcloud sql instances patch --enable-bin-log [MASTER_INSTANCE_NAME]
```

Enabling binary logs causes the instance to be restarted.

4. Create the replica:

```
gcloud sql instances create [FAILOVER_REPLICA_NAME] \  
  --master-instance-name=[MASTER_INSTANCE_NAME] \  
  --replica-type=FAILOVER
```

Updating an instance from legacy to current high availability

If you have an existing MySQL instance that use the legacy high availability and you want to configure it with the current version of high availability, do the following:

1. Delete the failover replica on the MySQL instances you want to update. See [Legacy configuration: Disabling high availability on an instance](https://cloud.google.com/sql/docs/mysql/configure-ha#disable-ha-legacy) (<https://cloud.google.com/sql/docs/mysql/configure-ha#disable-ha-legacy>).
2. Configure the instance to use the current version of high availability high availability. See [Configuring an existing instance for high availability](https://cloud.google.com/sql/docs/mysql/configure-ha#ha-existing) (<https://cloud.google.com/sql/docs/mysql/configure-ha#ha-existing>).

Initiating failover

Testing failover is optional, but is recommended so that you can see how your application responds in the event of a failover.

Note: This feature helps you test your application's response to an automatic failover. Make sure your instance has completed any previous failover (so it is responding to connection requests) before you trigger another failover.

To learn more about failovers, see the [Failover overview](https://cloud.google.com/sql/docs/mysql/high-availability#failover-overview) (<https://cloud.google.com/sql/docs/mysql/high-availability#failover-overview>).

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1. Go to the Cloud SQL Instances page in the Google Cloud Console.

[GO TO THE CLOUD SQL INSTANCES PAGE \(HTTPS://CONSOLE.CLOUD.GOOGLE.COM/SQL/INSTANCES\)](https://console.cloud.google.com/sql/instances)

2. Click the master instance name to open its **Instance details** page.
3. Click **Failover** in the button bar.

The instance fails over and is not available to serve data for a few minutes.

Legacy configuration: Creating an alert for replication lag

The time required for a failover operation depends on the amount of replication lag when failover is initiated. You can use Stackdriver Monitoring in the Google Cloud Console to alert you when replication lag exceeds a threshold.

For more information about replication lag, search for "seconds_behind_master" on the [SHOW SLAVE STATUS Syntax](https://dev.mysql.com/doc/refman/5.7/en/show-slave-status.html) (https://dev.mysql.com/doc/refman/5.7/en/show-slave-status.html) page in the MySQL documentation.

For more information about Stackdriver Monitoring, see [the Stackdriver Monitoring documentation](https://cloud.google.com/monitoring/docs/) (https://cloud.google.com/monitoring/docs/).

Note: Newly created Cloud SQL instances can take some time to appear in the Stackdriver Monitoring interface. If you do not see an instance that was recently created, check back again in an hour or so.

Legacy configuration: Setting an alert for a specific failover replica

1. Click the Stackdriver logo in the upper-left corner to return to the main Stackdriver Monitoring page.
2. Click **Create Alerting Policy**.
3. Enter a descriptive name for your alert.
4. Select **Metric Threshold** and click **Next** to open the Target tab.
5. For **Resource Type**, select **Cloud SQL**.

6. For **Applies To**, select **Single**, then select your failover replica.
7. Click **Next** to open the Configuration tab.
8. Enter the following values:

Field	Value
If Metric	Seconds Behind Master
Condition	above
Thresholds	120 (or whatever value is appropriate for your environment)
For	3 minutes

9. Select your desired **Notification** methods, and click **Save Condition**.

Legacy configuration: Setting an alert for a group of failover replicas

If you plan to create multiple failover replicas in the same project, it could be easier to set the alert for the entire group, rather than on each failover replica individually. To create a group for monitoring, use a suffix for the failover replicas' names, such as "-failover". Make sure you do not use this suffix for any other types of Cloud SQL instances.

Create your failover replica group:

1. Go to the Cloud SQL Instances page in the Google Cloud Console.

[GO TO THE CLOUD SQL INSTANCES PAGE \(HTTPS://CONSOLE.CLOUD.GOOGLE.COM/SQL/INSTANCES\)](https://console.cloud.google.com/sql/instances)

2. From the left-hand menu, select Monitoring to open the Stackdriver Monitoring page, and log in.
3. From the upper menu bar, select **Groups > Create....**
4. Enter a descriptive name for your group.
5. Leave **Name** and **Contains** selected, and enter your name substring.
6. Click **Save Group**. The summary page for the new group opens.
7. Confirm that the expected instances are included in the group.

Note: If you open the **Groups Overview** page, where all existing groups are listed, your group shows 0 instances. This is because Stackdriver uses the term "instances" to mean VMs and VM clusters. Cloud SQL instances are shown under *Resources*.

Create the alert for the failover replica group:

1. Click the Stackdriver logo in the upper-left corner to return to the main Stackdriver Monitoring page.
2. Click **Create Alerting Policy**.
3. Enter a descriptive name for your group alert.
4. Select **Metric Threshold** and click **Next** to open the Target tab.
5. For **Resource Type**, select **Cloud SQL**.
6. For **Applies To**, select **Group**, then select your failover group.
7. Leave **Any Member Violates** selected and click **Next** to open the Configuration tab.
8. Enter the following values:

Field	Value
If Metric	Seconds Behind Master
Condition	above
Thresholds	120 (or whatever value is appropriate for your environment)
For	3 minutes

9. Select your desired **Notification** methods, and click **Save Condition**.

Verifying an instance has high availability

To verify an instance has high availability:

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1. Go to the Cloud SQL Instances page in the Google Cloud Console.

[GO TO THE CLOUD SQL INSTANCES PAGE \(HTTPS://CONSOLE.CLOUD.GOOGLE.COM/SQL/INSTANCES\)](https://console.cloud.google.com/sql/instances)

2. Click an instance name to open its **Instance details** page.
3. Under **Configuration**, it shows **Highly available (regional)**.

Disabling high availability on an instance

Before you perform this procedure, make sure there are no operations currently running on the instance.

To disable high availability:

CONSOLE

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CURL

1. Go to the Cloud SQL Instances page in the Google Cloud Console.

[GO TO THE CLOUD SQL INSTANCES PAGE \(HTTPS://CONSOLE.CLOUD.GOOGLE.COM/SQL/INSTANCES\)](https://console.cloud.google.com/sql/instances)

2. Select the instance you want to disable high availability on.
3. On the **Instance details** page, click **EDIT**.
4. Open **Auto backups**.
5. Under **Availability** click **Single zone**.
6. Click **Save**. This edit requires a restart of the instance.
7. When you see the message box, click **SAVE AND RESTART**.

Legacy configuration: Disabling high availability on an instance

You need to delete the failover replica instance to remove high availability from the master instance.

Before you perform this procedure, make sure there are no operations currently running on the master instance.

To disable high availability:

CONSOLE

GCLOUD

CURL

1. Go to the Cloud SQL Instances page in the Google Cloud Console.

GO TO THE CLOUD SQL INSTANCES PAGE ([HTTPS://CONSOLE.CLOUD.GOOGLE.COM/SQL/INSTANCES](https://console.cloud.google.com/sql/instances))

2. Select the failover instance associated with the instance you want to disable high availability on.
3. On the **Instance details** page, click **DELETE**.
4. In the **Delete Replica** window, retype the name of failover instance.
5. Click **DELETE**. The configuration for the original instance changes to zonal.

What's next

- Learn more about [how the high availability configuration works](https://cloud.google.com/sql/docs/mysql/high-availability) (<https://cloud.google.com/sql/docs/mysql/high-availability>).
- Test how your application responds to lost connections by [restarting your instance](https://cloud.google.com/sql/docs/mysql/start-stop-restart-instance) (<https://cloud.google.com/sql/docs/mysql/start-stop-restart-instance>).
- Learn more about [managing your database connections](https://cloud.google.com/sql/faq#connections) (<https://cloud.google.com/sql/faq#connections>).
- Learn more about [Stackdriver Monitoring](https://cloud.google.com/monitoring/docs/) (<https://cloud.google.com/monitoring/docs/>).
- [Create read replicas](https://cloud.google.com/sql/docs/mysql/replication) (<https://cloud.google.com/sql/docs/mysql/replication>) for your instance.

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