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# Best practices for importing and exporting data

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**MySQL** | [PostgreSQL](https://cloud.google.com/sql/docs/postgres/import-export/) (<https://cloud.google.com/sql/docs/postgres/import-export/>) | [SQL Server](https://cloud.google.com/sql/docs/sqlserver/import-export/) (<https://cloud.google.com/sql/docs/sqlserver/import-export/>)

This page provides best practices for importing and exporting data with Cloud SQL. For step-by-step instructions for importing data into Cloud SQL, see [Importing Data](https://cloud.google.com/sql/docs/mysql/import-export/importing/)

(<https://cloud.google.com/sql/docs/mysql/import-export/importing/>). To export data for import into Cloud SQL, see [Exporting Data for Import into Cloud SQL](https://cloud.google.com/sql/docs/mysql/import-export/creating-sqldump-csv/)

(<https://cloud.google.com/sql/docs/mysql/import-export/creating-sqldump-csv/>). To export data from Cloud SQL for use in a MySQL instance that you manage, see [Exporting Data](https://cloud.google.com/sql/docs/mysql/import-export/exporting/) (<https://cloud.google.com/sql/docs/mysql/import-export/exporting/>).

## Best practices for importing and exporting

The following are best practices you should consider when importing and exporting data:

- [Don't use Requester Pays buckets](#) (#restrictions)
- [Use the correct flags when you create a SQL dump file](#) (#sqldump\_flags)
- [Compress data to reduce cost](#) (#data\_compression)
- [Use InnoDB](#) (#storage\_engine)
- [Tips for long-running import and export processes](#) (#long\_running)

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### Don't use Requester Pays buckets

You cannot use a bucket that has [Requester Pays](#)

(<https://cloud.google.com/storage/docs/requester-pays>) enabled for imports and exports from Cloud SQL.

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## Use the correct flags when you create a SQL dump file

If you do not use the right flags when you export your data to a SQL dump file, your import might be unsuccessful. For information about creating a SQL dump file for import into Cloud SQL, see [Creating a SQL dump file](#)

(<https://cloud.google.com/sql/docs/mysql/import-export/creating-sqldump-csv#sqldump>).

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## Compress data to reduce cost

Cloud SQL supports importing and exporting both compressed and uncompressed files. Compression can save significant storage space on Cloud Storage and reduce your storage costs, especially when you are exporting large instances.

When you export a SQL dump or CSV file, use a `.gz` file extension to compress the data. When you import a file with an extension of `.gz`, it is decompressed automatically.

First Generation instances do not support compression for CSV files.

**Note:** Second Generation is replacing First Generation; support for First Generation instances ends January 30, 2020. To upgrade a First Generation instance to Second Generation, see [Upgrading a First Generation Instance to Second Generation](#) (<https://cloud.google.com/sql/docs/mysql/upgrade-2nd-gen>).

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## Use InnoDB

InnoDB is the only supported storage engine for Second Generation instances. For First Generation instances, all storage engines are supported.

**Note:** Second Generation is replacing First Generation; support for First Generation instances ends January 30, 2020. To upgrade a First Generation instance to Second Generation, see [Upgrading a First Generation Instance to Second Generation](#) (<https://cloud.google.com/sql/docs/mysql/upgrade-2nd-gen>).

You can convert your tables from MyISAM to InnoDB by piping the output of `mysqldump` through a `sed` script as follows:

```
mysqldump --databases [DATABASE_NAME] \  
-h [INSTANCE_IP] -u [USERNAME] -p [PASSWORD] \  
--hex-blob --default-character-set=utf8mb4 | sed 's/ENGINE=MyISAM/ENGINE=InnoDB/g' >
```

**Warning:** You should not do this if your `mysqldump` file contains the `mysql` schema. Those files must remain in MyISAM.

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## Tips for long-running import and export processes

Imports and exports into Cloud SQL using the import functionality (via a Cloud Storage bucket) can take a long time to complete, depending on the size of the database. This can have the following impacts:

- On First Generation instances, operations are limited to 24 hours.

★ **Note:** Second Generation is replacing First Generation; support for First Generation instances ends January 30, 2020. To upgrade a First Generation instance to Second Generation, see [Upgrading a First Generation Instance to Second Generation](#) (<https://cloud.google.com/sql/docs/mysql/upgrade-2nd-gen>).

- You cannot stop a long-running operation.

In addition, you can perform only one import or export operation at a time for each instance.

You can decrease the amount of time a single operation requires by using one of the following approaches:

- Use the Cloud SQL import or export functionality, but do it with smaller batches of data that will take less than 24 hours to complete.
- Don't use the Cloud SQL import or export functionality, but instead replay a dump file directly to Cloud SQL. For example, you can use `cloudsql-import` (<https://github.com/GoogleCloudPlatform/cloudsql-import>), which imports by replaying a

mysqldump file over a MySQL connection. `cloudsql-import` is resilient to connection failures and instance restarts.

For more tips, see [Diagnosing Issues with Cloud SQL Instances](https://cloud.google.com/sql/docs/mysql/diagnose-issues#import-export) (<https://cloud.google.com/sql/docs/mysql/diagnose-issues#import-export>).

## What's next

- [Learn how to import data into Cloud SQL](https://cloud.google.com/sql/docs/mysql/import-export/importing) (<https://cloud.google.com/sql/docs/mysql/import-export/importing>).
- [Learn how to export data using Cloud SQL](https://cloud.google.com/sql/docs/mysql/import-export/exporting) (<https://cloud.google.com/sql/docs/mysql/import-export/exporting>).
- [Learn how to enable automatic backups](https://cloud.google.com/sql/docs/mysql/backup-recovery/backups) (<https://cloud.google.com/sql/docs/mysql/backup-recovery/backups>).
- [Learn how to restore from backups](https://cloud.google.com/sql/docs/mysql/backup-recovery/restore) (<https://cloud.google.com/sql/docs/mysql/backup-recovery/restore>).

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