Cloud SQL for SQL Server features

MySQL (/sql/docs/mysql/features) | PostgreSQL (/sql/docs/postgres/features) | **SQL Server**

This page describes the major features and capabilities of Cloud SQL for SQL Server. Cloud SQL is also available for MySQL (/sql/docs/mysql/features) and PostgreSQL (/sql/docs/postgres/features).

Note: For information about the supported versions of database engines, see Database versions and version policies (/sql/docs/sqlserver/db-versions).

SQL Server feature support for Cloud SQL

- Fully managed SQL Server databases in the cloud.
- Custom machine types with up to 624 GB of RAM and 96 CPUs.
- Up to 64 TB of storage available, with the ability to automatically increase storage size as needed.
- Create and manage instances in the Google Cloud console (https://console.cloud.google.com/).
- Instances available in the Americas, Europe, Asia or Australia. See all locations where you can create Cloud SQL instances (/sql/docs/sqlserver/locations).
- Customer data encrypted on Google's internal networks and in database tables, temporary files, and backups.
- Column- and cell-level encryption for user databases.
- Support for secure external connections with the Cloud SQL Auth Proxy or with the SSL/TLS protocol.
- Import databases using BAK and SQL files.
- Export databases using BAK files.
- Automated backups, on-demand backups, and point-in-time recovery.
- Instance cloning.
- Integration with Stackdriver logging and monitoring.

- SQL Server Agent enabled to facilitate replication and other jobs.
- Data replication between multiple regions.
- Set a default collation for databases, when creating an instance.
- High availability through a regional persistent disk.
- Integration with Managed Service for Microsoft Active Directory, including Windows Authentication.
- Change Data Capture (CDC).
- Intelligent query processing.
- Accelerated database recovery.
- Enhanced data classification.
- UTF-8 character encoding support.
- Enhanced monitoring.
- Dynamic Data Masking (DDM).
- Linked Servers.
- SQL Server Audit.
- SQL Server Publisher.
- SQL Server Subscriber.
- SQL Server Integration Services (SSIS) that runs on a separate host and connects to Cloud SQL.
- SQL Server Reporting Services (SSRS) that runs on a separate host and connects to Cloud SQL.
- The bulk copy program (bcp) utility. To learn more about downloading and installing the bcp utility, see the Microsoft documentation (https://learn.microsoft.com/en-us/sql/tools/bcp-utility?view=sql-server-ver16#download-the-latest-version-of-bcp-utility) .
- BACPAC file imports and exports by using SqlPackage. To learn more about downloading and installing SqlPackage, see the Microsoft documentation (https://learn.microsoft.com/en-us/sql/tools/sqlpackage/sqlpackage-download?view=sql-server-ver16) .

- Bulk insert for importing data. This feature is supported only on SQL Server 2022. You can use a stored procedure for performing bulk insert. For more information, see Use bulk insert for importing data (/sql/docs/sqlserver/import-export#bulk-insert).
- Always Encrypted without secure enclaves.
- Extended Events (XEvents).

SQL Server features unavailable for Cloud SQL

The following features are unavailable in Cloud SQL and Google Cloud doesn't support them:

General SQL Server features unavailable for Cloud SQL

- SQL Server Analysis Services (SSAS)
- SP_Configure settings. For more information about this feature, see Configure database flags (/sql/docs/sqlserver/flags).
- Stretch database
- Backing up to Microsoft Azure Blob Storage
- Buffer pool extension
- The OPENROWSET feature
- Data Quality Services
- Database Log Shipping
- Database Mail
- Distribution Transaction Coordinator (MSDTC)
- File tables
- FILESTREAM support
- Maintenance Plans
- Performance Data Collector
- Policy-Based Management
- PolyBase

- Machine Learning and R Services
- Resource Governor
- Server-level triggers
- Service Broker endpoints
- T-SQL endpoints (all operations using `CREATE ENDPOINT` are unavailable)
- WCF Data Services
- The `sysadmin` role and system stored procedures that require it
- Hybrid buffer pool
- Memory-optimized tempdb metadata
- In-memory OLTP support for database snapshots
- Registering external languages
- Row-level security
- Transparent Data Encryption (TDE). For information about encryption on Google Cloud, see About customer-managed encryption keys (CMEK) (/sql/docs/sqlserver/cmek) and Default encryption at rest (https://cloud.google.com/docs/security/encryption/default-encryption).
- Object storage backup and restore
- In-memory database: persistent memory
- Real-time operational analytics
- Integrated acceleration and offloading
- Hybrid buffer pool with direct write
- Multi-write replication
- Link to Azure SQL Managed instance
- Contained availability group
- Always Encrypted with secure enclaves
- Azure Active Directory authentication
- Support for PFX certificates and other cryptographic improvements
- MS-TDS 8.0 protocol and TLS 1.3

Note: Cloud SQL is a managed service so it restricts access to certain system procedures and tables that require advanced privileges; you can't create or have access to users with superuser permissions.

Other SQL Server operations unavailable for Cloud SQL

- ADMINISTER BULK OPERATIONS
- ALTER ANY CREDENTIAL
- ALTER ANY EVENT NOTIFICATION
- ALTER ANY EVENT SESSION
- ALTER RESOURCES
- ALTER SETTINGS
- AUTHENTICATE SERVER
- CONTROL_SERVER
- CREATE DDL EVENT NOTIFICATION
- CREATE ENDPOINT
- CREATE TRACE EVENT NOTIFICATION
- EXTERNAL ACCESS ASSEMBLY
- RESTORE
- SHUTDOWN
- CLR ASSEMBLIES

Supported syntax for Cloud SQL for SQL Server

Cloud SQL supports the Transact-SQL syntax (https://docs.microsoft.com/en-us/sql/t-sql/language-elements/transact-sql-syntax-conventions-transact-sql?view=sql-server-2017)
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Supported languages for Cloud SQL for SQL Server

You can use Cloud SQL with App Engine applications running in the flexible environment that are written in:

- C#
- Go
- Java
- Node.js
- PHP
- Python
- Ruby

How you can connect to Cloud SQL for SQL Server instances

You can connect to a Cloud SQL instance from:

- SQL Server Management Studio (SSMS) (https://docs.microsoft.com/en-us/sql/ssms/sql-server-management-studio-ssms?view=sql-server-2017) .
    - A client. Learn more (/sql/docs/sqlserver/connect-admin-ip).
- The sqlcmd utility (https://docs.microsoft.com/en-us/sql/ssms/scripting/sqlcmd-use-the-utility?view=sql-server-2017) .

Connecting to Cloud SQL with Private Google access isn't supported.

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