

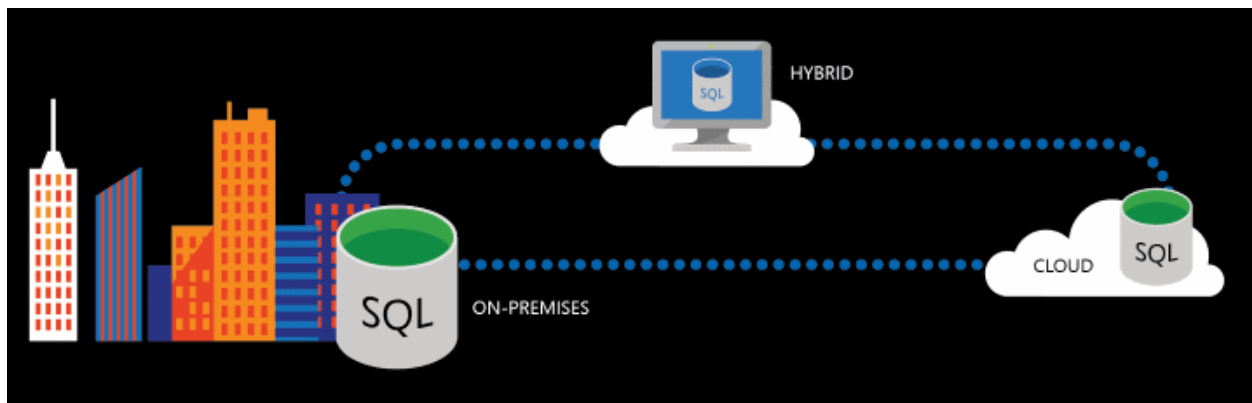
What's new in SQL Server 2016

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Applies to:  SQL Server 2016 (13.x) and later versions

With SQL Server 2016, you can build intelligent, mission-critical applications using a scalable, hybrid database platform that has everything built in, from in-memory performance and advanced security to in-database analytics. The SQL Server 2016 release adds new security features, querying capabilities, Hadoop and cloud integration, R analytics and more, along with numerous improvements and enhancements.

This page provides summary information and links to more detailed SQL Server 2016 what's new information for each SQL Server component.



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SQL Server 2016 Database Engine

- You can now configure **multiple tempDB** database files during SQL Server installation and setup.
- New **Query Store** stores query texts, execution plans, and performance metrics within the database, allowing easy monitoring and troubleshooting of performance issues. A dashboard shows which queries consumed the most time, memory or CPU resources.
- **Temporal tables** are history tables which record all data changes, complete with the date and time they occurred.

- New built-in **JSON support** in SQL Server supports JSON imports, exports, parsing and storing.
- New **PolyBase** query engine integrates SQL Server with external data in Hadoop or Azure Blob storage. You can import and export data as well as executing queries.
- The new **Stretch Database** feature lets you dynamically, securely archive data from a local SQL Server database to an Azure SQL database in the cloud. SQL Server automatically queries both local and remote data in the linked databases.
- **In-memory OLTP:**
 - Now supports FOREIGN KEY, UNIQUE and CHECK constraints, and native compiled stored procedures OR, NOT, SELECT DISTINCT, OUTER JOIN, and subqueries in SELECT.
 - Supports tables up to 2TB (up from 256GB).
 - Has columnstore index enhancements for sorting and Always On Availability Group support.
- New security features:
 - **Always Encrypted:** When enabled, only the application that has the encryption key can access the encrypted sensitive data in the SQL Server 2016 database. The key is never passed to SQL Server.
 - **Dynamic Data Masking:** If specified in the table definition, masked data is hidden from most users, and only users with UNMASK permission can see the complete data.
 - **Row Level Security:** Data access can be restricted at the database engine level, so users see only what is relevant to them.

SQL Server 2016 Analysis Services (SSAS)

SQL Server 2016 Analysis Services provides improved performance, authoring, database management, filtering, processing, and much more for tabular model databases based on the **1200 compatibility level**.

- **SQL Server R Services** integrate the R programming language, used for statistical analysis, into SQL Server.
- New **Database Consistency Checker (DBCC)** runs internally to detect potential data corruption issues.
- **Direct Query**, which queries live external data rather than importing it first, now supports more data sources, including Azure SQL, Oracle and Teradata.
- There are numerous new **DAX (Data Access Expressions) functions**.
- New **Microsoft.AnalysisServices.Tabular** namespace manages tabular mode instances and models.
- **Analysis Services Management Objects (AMO)** is re-factored to include a second assembly, **Microsoft.AnalysisServices.Core.dll**.

See [Analysis Services Engine \(SSAS\)](#).

SQL Server 2016 Integration Services (SSIS)

- Support for Always On Availability Groups
- Incremental package deployment
- Always Encrypted support
- New `ssis_logreader` database-level role
- New custom logging level
- Column names for errors in the data flow
- New connectors
- Support for the Hadoop file system (HDFS)

See [Integration Services \(SSIS\)](#).

SQL Server 2016 Master Data Services (MDS)

- Derived hierarchy improvements, including support for recursive and many-to-many hierarchies
- Domain-based attribute filtering
- Entity syncing for sharing entity data between models
- Approval workflows via **changesets**
- Custom indexes to improve query performance
- New permission levels for improved security
- Redesigned **business rules management** experience

See [Master Data Services \(MDS\)](#).



SQL Server 2016 Reporting Services (SSRS)

Microsoft has thoroughly revamped Reporting Services in this release.








- New **web Report Portal** with KPI feature
- New **Mobile Report Publisher**
- **Redesigned report rendering engine** that supports HTML5
- New **treemap** and **sunburst chart types**

See [Reporting Services \(SSRS\)](#).

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