


Editions and supported features of SQL Server 2016

Article • 09/17/2024

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

This article provides details of features supported by the SQL Server editions.

For information about other versions, see:

- [SQL Server 2022](#)
- [SQL Server 2019](#)
- [SQL Server 2017](#)
- [SQL Server 2014.](#)

Installation requirements vary based on your application needs. The different editions of SQL Server accommodate the unique performance, runtime, and price requirements of organizations and individuals. The SQL Server components that you install also depend on your specific requirements. The following sections help you understand how to make the best choice among the editions and components available in SQL Server.

The SQL Server Evaluation edition is available for a 180-day trial period.

For the latest release notes and what's new information, see the following:

- [SQL Server 2017 release notes](#)
- [SQL Server 2016 release notes](#)
- [What's new in SQL Server 2017](#)
- [What's new in SQL Server 2016](#)

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SQL Server editions

The following table describes the editions of SQL Server.

 [Expand table](#)

Edition	Definition
Enterprise	<p>The premium offering, SQL Server Enterprise edition delivers comprehensive high-end datacenter capabilities with blazing-fast performance, unlimited virtualization ¹, and end-to-end business intelligence, enabling high service levels for mission-critical workloads and end-user access to data insights.</p> <p>Enterprise edition is available for evaluation. An evaluation deployment is available for 180 days. For more information, see SQL Server Licensing Resources and Documents [↗].</p>
Standard	<p>SQL Server Standard edition delivers basic data management and business intelligence database for departments and small organizations to run their applications and supports common development tools for on-premises and cloud, enabling effective database management with minimal IT resources.</p>
Web	<p>SQL Server Web edition is a low total-cost-of-ownership option for Web hosters (including choosing Web edition on IaaS on Azure) and Web VAPs to provide scalability, affordability, and manageability capabilities for small to large-scale Web properties.</p>
Developer	<p>SQL Server Developer edition lets developers build any kind of application on top of SQL Server. It includes all the functionality of Enterprise edition, but is licensed for use as a development and test system, not as a production server. SQL Server Developer is an ideal choice for people who build and test applications.</p>
Express edition	<p>SQL Server Express edition is the entry-level, free database and is ideal for learning and building desktop and small server data-driven applications. It is the best choice for independent software vendors, developers, and hobbyists building client applications. If you need more advanced database features, SQL Server Express can be seamlessly upgraded to other higher end versions of SQL Server. SQL Server Express LocalDB is a lightweight version of Express edition that has all of its programmability features, runs in user mode and has a fast, zero-configuration installation and a short list of prerequisites.</p>

¹ Unlimited virtualization is available on Enterprise edition for customers with [Software Assurance](#) [↗]. Deployments must comply with the licensing guide. For more information, see [SQL Server Licensing Resources and Documents](#) [↗].

Use SQL Server with an Internet server

On an Internet server, such as a server that is running Internet Information Services (IIS), you will typically install the SQL Server client tools. Client tools include the client connectivity components used by an application connecting to an instance of SQL Server.

ⓘ Note

Although you can install an instance of SQL Server on a computer that is running IIS, this is typically done only for small web sites that have a single server computer. Most Web sites have their middle-tier IIS systems on one server or a cluster of servers, and their databases on a separate server or federation of servers.

SQL Server with client/server applications

You can install just the SQL Server client components on a computer that is running client/server applications that connect directly to an instance of SQL Server. A client components installation is also a good option if you administer an instance of SQL Server on a database server, or if you plan to develop SQL Server applications.

The client tools option installs the following SQL Server features: backward compatibility components, SQL Server Data Tools, connectivity components, management tools, software development kit, and SQL Server Books Online components. For more information, see [Install SQL Server](#).

Decide among SQL Server components

Use the Feature Selection page of the SQL Server Installation Wizard to select the components to include in an installation of SQL Server. By default, none of the features in the tree are selected.

Use the information in the following tables to determine the set of features that best fits your needs.

 Expand table


Server components	Description
SQL Server Database Engine	SQL Server Database Engine includes the Database Engine, the core service for storing, processing, and securing data, replication, full-text search, tools for managing relational and XML data, in database analytics integration, and PolyBase integration for access to Hadoop and other heterogeneous data sources, and the Data Quality Services (DQS) server.
Analysis Services	Analysis Services includes the tools for creating and managing online analytical processing (OLAP) and data mining applications.

Server components	Description
Reporting Services	Reporting Services includes server and client components for creating, managing, and deploying tabular, matrix, graphical, and free-form reports. Reporting Services is also an extensible platform that you can use to develop report applications.
Integration Services	Integration Services is a set of graphical tools and programmable objects for moving, copying, and transforming data. It also includes the Data Quality Services (DQS) component for Integration Services.
Master Data Services	Master Data Services (MDS) is the SQL Server solution for master data management. MDS can be configured to manage any domain (products, customers, accounts) and includes hierarchies, granular security, transactions, data versioning, and business rules, as well as an Add-in for Excel that can be used to manage data.
R Services (In-Database)	R Services (In-Database) supports distributed, scalable R solutions on multiple platforms and using multiple enterprise data sources, including Linux, Hadoop, and Teradata.

 Expand table

Management tools	Description
SQL Server Management Studio	<p>SQL Server Management Studio is an integrated environment to access, configure, manage, administer, and develop components of SQL Server. Management Studio lets developers and administrators of all skill levels use SQL Server.</p> <p>Download and install Management Studio from Download SQL Server Management Studio</p>
SQL Server Configuration Manager	SQL Server Configuration Manager provides basic configuration management for SQL Server services, server protocols, client protocols, and client aliases.
SQL Server Profiler	SQL Server Profiler provides a graphical user interface to monitor an instance of the Database Engine or Analysis Services.
Database Engine Tuning Advisor	Database Engine Tuning Advisor helps create optimal sets of indexes, indexed views, and partitions.
Data Quality Client	Provides a highly simple and intuitive graphical user interface to connect to the DQS server, and perform data cleansing operations. It also allows you to centrally monitor various activities performed during the data cleansing operation.

Management tools	Description
SQL Server Data Tools	<p>SQL Server Data Tools provides an IDE for building solutions for the Business Intelligence components: Analysis Services, Reporting Services, and Integration Services.</p> <p>(Formerly called Business Intelligence Development Studio).</p> <p>SQL Server Data Tools also includes "Database Projects", which provides an integrated environment for database developers to carry out all their database design work for any SQL Server platform (both on and off premise) within Visual Studio. Database developers can use the enhanced Server Explorer in Visual Studio to easily create or edit database objects and data, or execute queries.</p>
Connectivity Components	Installs components for communication between clients and servers, and network libraries for DB-Library, ODBC, and OLE DB.

 Expand table


Documentation	Description
SQL Server Books Online	Core documentation for SQL Server.

Developer and Evaluation Editions

For features supported by Developer and Evaluation editions, see features listed for the SQL Server Enterprise Edition in the tables below.

The Developer edition continues to support only 1 client for [SQL Server Distributed Replay](#).

Scale limits

 Expand table

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Maximum compute capacity used by a single instance - SQL Server Database Engine ¹	Operating system maximum	Limited to lesser of 4 sockets or 24 cores	Limited to lesser of 4 sockets or 16 cores	Limited to lesser of 1 socket or 4 cores	Limited to lesser of 1 socket or 4 cores

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Maximum compute capacity used by a single instance - Analysis Services or Reporting Services	Operating system maximum	Limited to lesser of 4 sockets or 24 cores	Limited to lesser of 4 sockets or 16 cores	Limited to lesser of 1 socket or 4 cores	Limited to lesser of 1 socket or 4 cores
Maximum memory for buffer pool per instance of SQL Server Database Engine	Operating System Maximum	128 GB	64 GB	1410 MB	1410 MB
Maximum capacity for buffer pool extension per instance of SQL Server Database Engine	32 * (max server memory configuration)	4 * (max server memory configuration)	N/A	N/A	N/A
Maximum memory for Columnstore segment cache per instance of SQL Server Database Engine	Unlimited memory	32 GB ²	16 GB ²	352 MB ²	352 MB ²
Maximum memory-optimized data size per database in SQL Server Database Engine	Unlimited memory	32 GB ²	16 GB ²	352 MB ²	352 MB ²
Maximum memory utilized per instance of Analysis Services	Operating System Maximum	Tabular: 16 GB MOLAP: 64 GB	N/A	N/A	N/A
Maximum memory utilized per instance of Reporting Services	Operating System Maximum	64 GB	64 GB	4 GB	N/A
Maximum relational database	524 PB	524 PB	524 PB	10 GB	10 GB

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
size					

¹ Enterprise Edition with Server + Client Access License (CAL) based licensing (not available for new agreements) is limited to a maximum of 20 cores per SQL Server instance. There are no limits under the Core-based Server Licensing model. For more information, see [Compute Capacity Limits by Edition of SQL Server](#).

² Applies to SQL Server 2016 (13.x) SP1 as part of creating a common programmability surface area (CPSA) across editions.

RDBMS high availability

 Expand table

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Server core support ¹	Yes	Yes	Yes	Yes	Yes
Log shipping	Yes	Yes	Yes	No	No
Database mirroring	Yes	Yes ⁴	Yes ⁵	Yes ⁵	Yes ⁵
Backup compression	Yes	Yes	No	No	No
Database snapshot	Yes	Yes ³	Yes ³	Yes ³	Yes ³
Always On failover cluster instances	16 nodes	2 nodes	No	No	No
Always On availability groups	Yes Up to 8 secondary replicas, including 2 synchronous secondary replicas	No	No	No	No
Basic availability groups ²	No	2 nodes	No	No	No
Online page and file restore	Yes	No	No	No	No

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Online indexing	Yes	No	No	No	No
Online schema change	Yes	No	No	No	No
Fast recovery	Yes	No	No	No	No
Mirrored backups	Yes	No	No	No	No
Hot add memory and CPU	Yes	No	No	No	No
Database recovery advisor	Yes	Yes	Yes	Yes	Yes
Encrypted backup	Yes	Yes	No	No	No
Hybrid backup to Azure (backup to URL)	Yes	Yes	No	No	No

¹ For more information on installing SQL Server on Server Core, see [Install SQL Server on Server Core](#).

² For more information about Basic availability groups, see [Basic Availability Groups](#).

³ Applies to SQL Server 2016 SP1 as part of creating a common programmability surface area (CPSA) across editions.

⁴ Full Safety only.

⁵ Witness only.

RDBMS scalability and performance

 Expand table

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Columnstore ^{1, 2}	Yes	Yes	Yes	Yes	Yes

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
In-Memory OLTP ^{1, 2}	Yes	Yes	Yes	Yes ³	Yes
Stretch Database	Yes	Yes	Yes	Yes	Yes
Persistent Main Memory	Yes	Yes	Yes	Yes	Yes
Multi-instance support	50	50	50	50	50
Table and index partitioning ²	Yes	Yes	Yes	Yes	Yes
Data compression ²	Yes	Yes	Yes	Yes	Yes
Resource Governor	Yes	No	No	No	No
Partitioned Table Parallelism ²	Yes	Yes	Yes	No	No
Multiple Filestream containers ²	Yes	Yes	Yes	Yes	Yes
NUMA Aware Large Page Memory and Buffer Array Allocation	Yes	No ⁴	No	No	No
Buffer Pool Extension	Yes	Yes	No	No	No
I/O Resource Governance	Yes	No	No	No	No
Read-Ahead	Yes	No	No	No	No
Advanced Scanning	Yes	No	No	No	No
Delayed Durability	Yes	Yes	Yes	Yes	Yes

¹ In-Memory OLTP data size and Columnstore segment cache are limited to the amount of memory specified by edition in the Scale Limits section. The max degree of parallelism is limited. The degree of process parallelism (DOP) for an index build is limited to 2 DOP for the Standard Edition and 1 DOP for the Web and Express Editions. This refers to columnstore indexes created over disk-based tables and memory-optimized tables.

² Applies to SQL Server 2016 (13.x) SP1 as part of creating a Common Programmability Surface Area (CPSA) across editions. Aggregate Pushdown, String Predicate Pushdown, and SIMD Optimizations are SQL Server Enterprise Edition scalability enhancements. For more detail, see [Columnstore indexes - what's new](#).

³ This feature isn't included in the LocalDB installation option.

⁴ Standard Edition and SQL Server + CAL-based licensing can restrict how many processors SQL Server Standard can use, but SQL Server Standard is NUMA aware.

RDBMS security

[Expand table](#)

Feature	Enterprise	Standard	Web	Express	Express with Advanced Services
Row-level security	Yes	Yes	Yes ¹	Yes ¹	Yes ¹
Always Encrypted	Yes	Yes ¹	Yes ¹	Yes ¹	Yes ¹
Dynamic data masking	Yes	Yes	Yes ¹	Yes ¹	Yes ¹
Server audit	Yes	Yes	Yes	Yes	Yes
Database audit	Yes	Yes ¹	Yes ¹	Yes ¹	Yes ¹
Transparent database encryption	Yes	No	No	No	No
Extensible key management	Yes	No	No	No	No
User-defined roles	Yes	Yes	Yes	Yes	Yes
Contained databases	Yes	Yes	Yes	Yes	Yes
Encryption for backups	Yes	Yes	No	No	No

¹ Applies to SQL Server 2016 (13.x) SP1 as part of creating a common programmability surface area (CPSA) across editions.

Replication

[Expand table](#)

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Heterogeneous subscribers	Yes	Yes	No	No	No
Merge replication	Yes	Yes	Yes ¹	Yes ¹	Yes ¹

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Oracle publishing	Yes	No	No	No	No
Peer to peer transactional replication	Yes	No	No	No	No
Snapshot replication	Yes	Yes	Yes ¹	Yes ¹	Yes ¹
SQL Server change tracking	Yes	Yes	Yes	Yes	Yes
Transactional replication	Yes	Yes	Yes ¹	Yes ¹	Yes ¹
Transactional replication to Azure	Yes	Yes	No	No	No
Transactional replication updatable subscription	Yes	Yes	No	No	No

¹ Subscriber only.

Management tools

[Expand table](#)

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
SQL Management Objects (SMO)	Yes	Yes	Yes	Yes	Yes
SQL Configuration Manager	Yes	Yes	Yes	Yes	Yes
SQL CMD (Command Prompt tool)	Yes	Yes	Yes	Yes	Yes
Distributed Replay - Admin Tool	Yes	Yes	Yes	Yes	No
Distribute Replay - Client	Yes	Yes	Yes	No	No
Distributed Replay - Controller	Up to 16 clients	1 client	1 client	No	No
SQL Profiler	Yes	Yes	No ¹	No ¹	No ¹
SQL Server Agent	Yes	Yes	Yes	No	No

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Microsoft System Center Operations Manager Management Pack	Yes	Yes	Yes	No	No
Database Tuning Advisor (DTA)	Yes	Yes ²	Yes ²	No	No

¹ SQL Server Web, SQL Server Express, SQL Server Express with Tools, and SQL Server Express with Advanced Services can be profiled using SQL Server Standard and SQL Server Enterprise editions.

² Tuning enabled only on Standard edition features

RDBMS manageability

[Expand table](#)

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
User instances	No	No	No	Yes	Yes
LocalDB	No	No	No	Yes	No
Dedicated admin connection	Yes	Yes	Yes	Yes ³	Yes ³
PowerShell scripting support	Yes	Yes	Yes	Yes	Yes
SysPrep support ¹	Yes	Yes	Yes	Yes	Yes
Support for data-tier application component operations - extract, deploy, upgrade, delete	Yes	Yes	Yes	Yes	Yes
Policy automation (check on schedule and change)	Yes	Yes	Yes	No	No
Performance data collector	Yes	Yes	Yes	No	No
Able to enroll as a managed instance in multi-instance management	Yes	Yes	Yes	No	No
Standard performance reports	Yes	Yes	Yes	No	No

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Plan guides and plan freezing for plan guides	Yes	Yes	Yes	No	No
Direct query of indexed views (using NOEXPAND hint)	Yes	Yes	Yes	Yes	Yes
Automatic indexed views maintenance	Yes	Yes	Yes	No	No
Distributed partitioned views	Yes	No	No	No	No
Parallel index operations	Yes	No	No	No	No
Automatic use of indexed view by query optimizer	Yes	No	No	No	No
Parallel consistency check	Yes	No	No	No	No
SQL Server Utility Control Point	Yes	No	No	No	No
Buffer pool extension	Yes	Yes	No	No	No

¹ For more information, see [Considerations for Installing SQL Server Using SysPrep](#).

² Applies to SQL Server 2016 (13.x) SP1 as part of creating a common programmability surface area (CPSA) across editions.

³ With trace flag.

Development tools

 Expand table

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Microsoft Visual Studio integration	Yes	Yes	Yes	Yes	Yes
Intellisense (Transact-SQL and MDX)	Yes	Yes	Yes	Yes	Yes
SQL Server Data Tools (SSDT)	Yes	Yes	Yes	Yes	No
MDX edit, debug, and design tools	Yes	Yes	No	No	No

Programmability

 Expand table

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Basic R integration	Yes	Yes	Yes	Yes	No
Advanced R integration	Yes	No	No	No	No
R Server (Standalone)	Yes	No	No	No	No
PolyBase compute node	Yes	Yes ¹	Yes ^{1, 2}	Yes ^{1, 2}	Yes ^{1, 2}
PolyBase head node	Yes	No	No	No	No
JSON	Yes	Yes	Yes	Yes	Yes
Query Store	Yes	Yes	Yes	Yes	Yes
Temporal	Yes	Yes	Yes	Yes	Yes
Common Language Runtime (CLR) Integration	Yes	Yes	Yes	Yes	Yes
Native XML support	Yes	Yes	Yes	Yes	Yes
XML indexing	Yes	Yes	Yes	Yes	Yes
MERGE and UPSERT capabilities	Yes	Yes	Yes	Yes	Yes
FILESTREAM support	Yes	Yes	Yes	Yes	Yes
FileTable	Yes	Yes	Yes	Yes	Yes
Date and Time datatypes	Yes	Yes	Yes	Yes	Yes
Internationalization support	Yes	Yes	Yes	Yes	Yes
Full-text and semantic search	Yes	Yes	Yes	Yes	No
Specification of language in query	Yes	Yes	Yes	Yes	No
Service Broker (messaging)	Yes	Yes	No ³	No ³	No ³
Transact-SQL endpoints	Yes	Yes	Yes	No	No

¹ Scale out with multiple compute nodes requires a head node.

² Applies to SQL Server 2016 (13.x) SP1 as part of creating a common programmability surface area (CPSA) across editions.

³ Client only.

Integration Services

For info about the Integration Services (SSIS) features supported by the editions of SQL Server, see [Integration Services Features Supported by the Editions of SQL Server](#).

Master Data Services

For information about the Master Data Services and Data Quality Services features supported by the editions of SQL Server, see [Master Data Services and Data Quality Services Features Supported by the Editions of SQL Server](#).

Data warehouse

 Expand table

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Create cubes without a database	Yes	Yes	No	No	No
Autogenerate staging and data warehouse schema	Yes	Yes	No	No	No
Change data capture	Yes	Yes ¹	No	No	No
Star join query optimizations	Yes	No	No	No	No
Scalable read-only Analysis Services configuration	Yes	No	No	No	No
Parallel query processing on partitioned tables and indexes	Yes	No	No	No	No
Global batch aggregation	Yes	No	No	No	No

¹ Applies to SQL Server 2016 (13.x) SP1 as part of creating a common programmability surface area (CPSA) across editions.

Analysis Services

For information about the Analysis Services features supported by the editions of SQL Server, see [Analysis Services Features Supported by the Editions of SQL Server](#).

BI semantic model (multidimensional)

For information about the Analysis Services features supported by the editions of SQL Server, see [Analysis Services Features Supported by the Editions of SQL Server](#).

BI semantic model (tabular)

For information about the Analysis Services features supported by the editions of SQL Server, see [Analysis Services Features Supported by the Editions of SQL Server](#).

Power Pivot for SharePoint

For information about the Power Pivot for SharePoint features supported by the editions of SQL Server, see [Analysis Services Features Supported by the Editions of SQL Server](#).

Data mining

For information about the data mining features supported by the editions of SQL Server, see [Analysis Services Features Supported by the Editions of SQL Server](#).


Reporting Services

For information about the Reporting Services features supported by the editions of SQL Server, see [Reporting Services Features Supported by the Editions of SQL Server](#).

Business intelligence clients

For information about the Business Intelligence Client features supported by the editions of SQL Server, see [Analysis Services Features Supported by the Editions of SQL Server](#) or [Reporting Services Features Supported by the Editions of SQL Server](#).

Spatial and location services

 Expand table

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
Spatial indexes	Yes	Yes	Yes	Yes	Yes
Planar and geodetic datatypes	Yes	Yes	Yes	Yes	Yes
Advanced spatial libraries	Yes	Yes	Yes	Yes	Yes
Import/export of industry-standard spatial data formats	Yes	Yes	Yes	Yes	Yes

Additional database services

 Expand table

Feature	Enterprise	Standard	Web	Express with Advanced Services	Express
SQL Server Migration Assistant	Yes	Yes	Yes	Yes	Yes
Database mail	Yes	Yes	Yes	No	No

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