



Top Ten: New Features in SQL Server 2014

The new In-Memory OLTP is at the top of the list.

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Mar 26, 2014



COMMENTS 0

Microsoft introduced some significant enhancements in [SQL Server 2014](#)—especially with In-Memory OLTP. However, as you might expect after such a short release cycle, not every subsystem has been updated; there are no major changes to SQL Server Integration Services (SSIS), SQL Server Replication Services, or SQL Server Reporting Services (SSRS). Nonetheless, there are plenty of significant enhancements. Here are 10 new features in SQL Server 2014.

1. In-Memory OLTP Engine

SQL Server 2014 enables memory optimization of selected tables and stored procedures. The In-Memory OLTP engine is designed for high concurrency and uses a new optimistic concurrency control mechanism to eliminate locking delays. Microsoft states that customers can expect performance to be up to 20 times better than with SQL Server 2012 when using this new feature. For more information, check out “[Rev Up Application Performance with the In-Memory OLTP Engine.](#)”

2. AlwaysOn Enhancements

Microsoft has enhanced AlwaysOn integration by expanding the maximum number of secondary replicas from four to eight. Readable secondary replicas are now also available for read workloads, even when the primary replica is unavailable. In addition, SQL Server 2014 provides the new Add Azure Replica Wizard, which helps you create asynchronous secondary replicas in Windows Azure.

Related: [No Fooling: SQL Server 2014 to Release April 1](#)

3. Buffer Pool Extension

SQL Server 2014 provides a new solid state disk (SSD) integration capability that lets you use SSDs to expand the SQL Server 2014 Buffer Pool as nonvolatile RAM (NvRAM). With the new Buffer Pool Extensions feature, you can use SSD drives to expand the buffer pool in systems that have maxed out their memory. Buffer Pool Extensions can provide performance gains for read-heavy OLTP workloads.

4. Updateable Columnstore Indexes

When Microsoft introduced the columnstore index in SQL Server 2012, it provided improved performance for data warehousing queries. For some queries, the columnstore indexes provided a tenfold performance improvement. However, to utilize the columnstore index, the underlying table had to be read-only. SQL Server 2014 eliminates this restriction with the new updateable Columnstore Index. The SQL Server 2014 Columnstore Index must use all the columns in the table and can't be combined with other indexes.

5. Storage I/O control

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The Resource Governor lets you limit the amount of CPU and memory that a given workload can consume. SQL Server 2014 extends the reach of the Resource Governor to manage storage I/O usage as well. The SQL Server 2014 Resource Governor can limit the physical I/Os issued for user threads in a given resource pool.

Related: [A Tale About SQL Service Packs for 2014](#)

6. Power View for Multidimensional Models

Power View used to be limited to tabular data. However, with SQL Server 2014, Power View can now be used with multidimensional models (OLAP cubes) and can create a variety of data visualizations including tables, matrices, bubble charts, and geographical maps. Power View multidimensional models also support queries using Data Analysis Expressions (DAX).

7. Power BI for Office 365 Integration

Power BI for Office 365 is a cloud-based business intelligence (BI) solution that provides data navigation and visualization capabilities. Power BI for Office 365 includes Power Query (formerly code-named Data Explorer), Power Map (formerly code-named GeoFlow), Power Pivot, and Power View. You can learn more about Power BI at [Microsoft's Power BI for Office 365 site](#).

8. SQL Server Data Tools for Business Intelligence

The new SQL Server Data Tools for BI (SSDT-BI) is used to create SQL Server Analysis Services (SSAS) models, SSRS reports, and SSIS packages. The new SSDT-BI supports SSAS and SSRS for SQL Server 2014 and earlier, but SSIS projects are limited to SQL Server 2014. In the pre-release version of SQL Server 2014, SQL Server Setup doesn't install SSDT-BI. Instead, you must [download SSDT-BI separately](#) from the Microsoft Download Center.

9. Backup Encryption

One welcome addition to SQL Server 2014 is the ability to encrypt database backups for at-rest data protection. SQL Server 2014 supports several encryption algorithms, including Advanced Encryption Standard (AES) 128, AES 192, AES 256, and Triple DES. You must use a certificate or an asymmetric key to perform encryption for SQL Server 2014 backups.

10. SQL Server Managed Backup to Windows Azure

SQL Server 2014's native backup supports Windows Azure integration. Although I'm not entirely convinced that I would want to depend on an Internet connection to restore my backups, on-premises SQL Server 2014 and Windows Azure virtual machine (VM) instances support backing up to Windows Azure storage. The Windows Azure backup integration is also fully built into SQL Server Management Studio (SSMS).



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