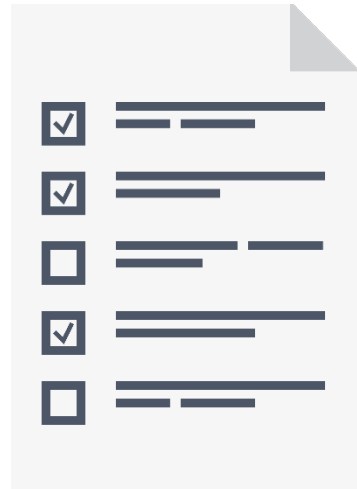# New Scalability Features in SQL Server 2014

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What This Module Covers

Buffer pool extensions

Resource governor enhancements

Columnstore clustered indexes

Delayed durability

New cardinality estimator

Buffer Pool Extensions

Extends buffer pool with non-volatile storage in your file system

Stores clean pages in a cache file

Should use fast, local flash storage for this

Works best for random read I/Os

Most useful with SQL Server Standard Edition

Resource Governor Enhancements

Adds ability to control physical I/O limits per volume in a resource pool

Can set minimum and maximum IOPS per volume

Makes Resource Governor much more powerful and useful in real life

Clustered Columnstore Indexes

Uses column-based data storage and query processing

Very well suited for large reporting queries and working with large DW fact tables

Clustered columnstore indexes are updateable

Delayed Durability

Uses asynchronous log writes to disk after log block fills up

Can alleviate bottlenecks on transaction log writes

Some data loss possible for committed transactions that are not fully written to disk

New Cardinality Estimator

Can help Query Optimizer create more optimal query plans in many cases

Can be controlled by compatibility level of database, trace flags, or query hints

Make sure to do comprehensive workload testing to avoid performance regressions

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Where to Go Next?

Check for new Pluralsight courses from me

You should consider these SQLskills courses on Pluralsight next:

- SQL Server 2014 DMV Diagnostic Queries – Part 1

- SQL Server 2014 DMV Diagnostic Queries – Part 2

- SQL Server 2014 DMV Diagnostic Queries – Part 3

- SQL Server: Troubleshooting Query Plan Quality Issues

Course Summary

Scaling is a complex subject with multiple system layers to consider to get best performance and scalability for SQL Server

Proper configuration and testing of each system layer is key to getting good scalability

Many default configuration options for OS, instance settings, and database properties are not best choices for performance

Many useful tools are available to help check and test your system

Thanks for watching!