Scaling up SQL Server

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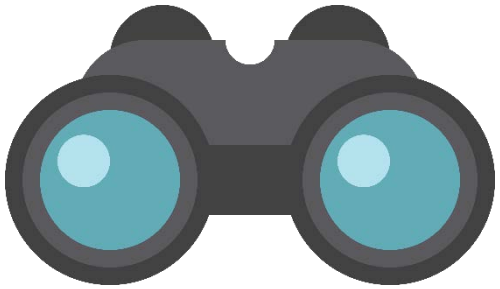
What This Module Covers

Capacity and license limits for SQL Server and Windows Server

Planning and implementing a hardware migration

Migrating to new hardware with minimal downtime

Windows Server License Limits

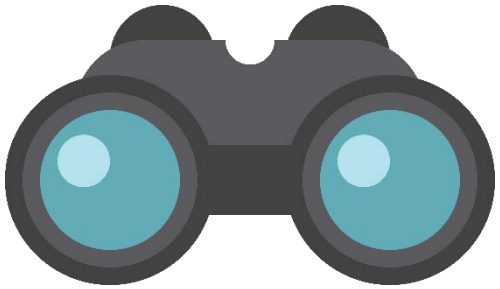


Windows Server 2012 and 2012 R2 are limited to 640 logical processors and 4TB of RAM

Current model commodity servers can exceed the 4TB RAM limit

Windows Server 2016 will allow 12TB of RAM

SQL Server License Limits



SQL Server 2012 and 2014 Enterprise Edition can use 640 logical processors and 4TB of RAM

SQL Server 2012 Standard Edition is limited to four sockets or 16 physical cores (whichever is lower) and 64 GB of RAM

SQL Server 2014 Standard Edition is limited to four sockets or 16 physical cores (whichever is lower) and 128 GB of RAM

SQL Server 2016 Enterprise Edition can use 12TB of RAM

SQL Server 2016 Standard Edition limits are currently unknown

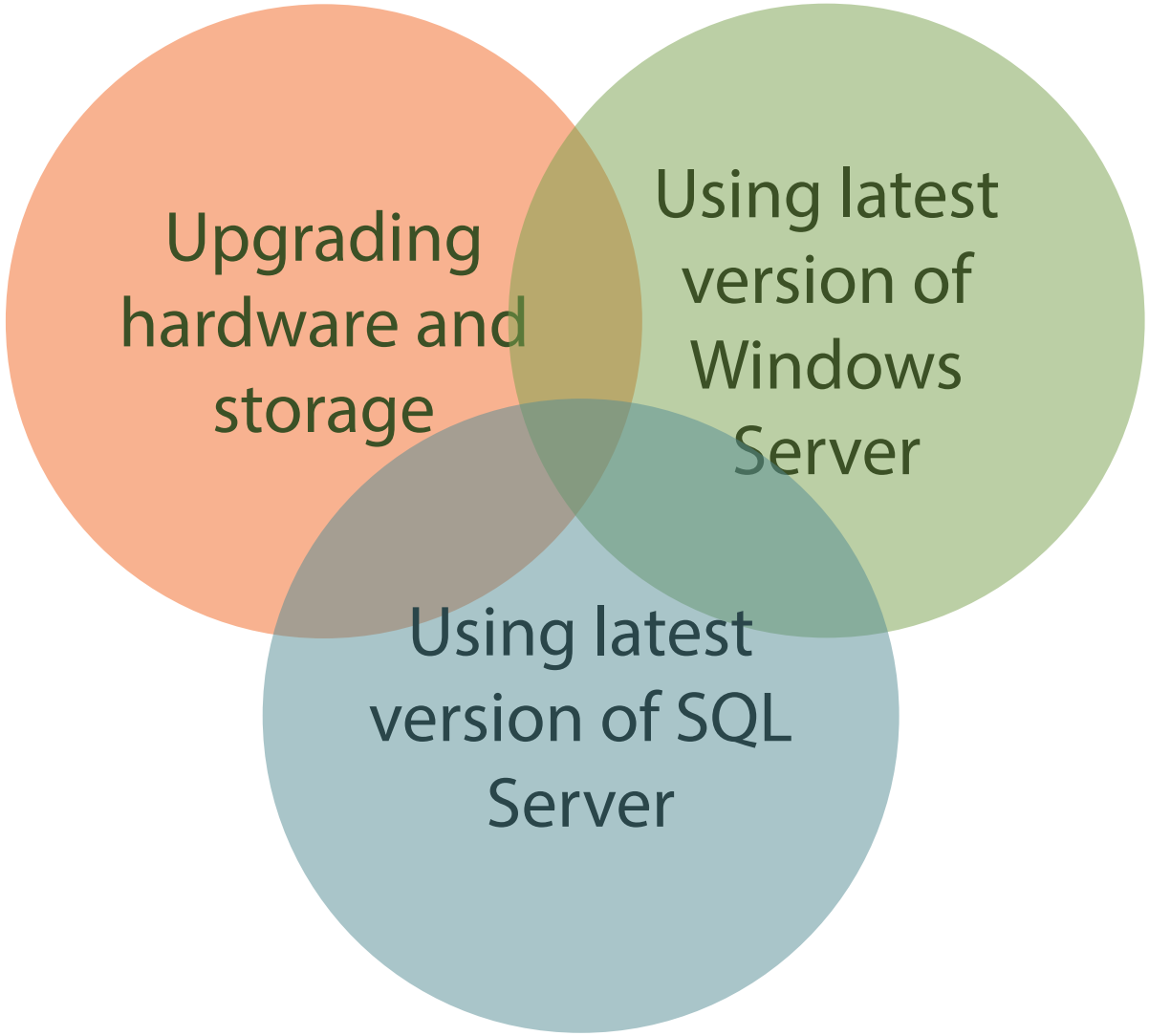
Diminishing Returns of Scaling Up

NUMA hardware does not scale in a perfectly linear fashion

Higher core count processors have lower base clock speeds

Larger server probably won't have twice the number of PCIe slots

Planning a Hardware Migration



Resist Temptation to Upgrade-in-place

Upgrading in place is stressful and risky (but is supported)

Much better to do a complete platform upgrade

New hardware, storage, fresh OS and SQL Server install

Gives performance benefits of new hardware and latest OS

Allows install, patch and configuration to be stress free

Much easier to do application testing before migration

Smoothly Migrating to New Hardware

Use database mirroring or log shipping to do production migration

- Allows a much easier migration with no data loss and a short outage

Allows migration to newer version of SQL Server

- Remember this is a one-way, one-time upgrade!

Both of these methods require some preparation work in advance

- Primarily involves a full backup and restore sequence, but this happens while you are still running on the old system

Database Mirroring vs. Log Shipping

Database mirroring

- Requires more preparation
- Has more restrictions
- Puts more stress on infrastructure
- Allows no data loss and short outage

Log shipping

- Requires less preparation
- Has fewer restrictions
- Less dependent on infrastructure
- Some potential for data loss

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