SQL Server 2012: Evaluating and Sizing Hardware

Module 4: SQL Server 2012 Editions and License Limits

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Introduction

- The importance of SQL Server 2012 editions and their respective license limits during the hardware selection process
- Different editions have hardware-related license limits that affect your hardware selection decisions
- Different editions have different licensing models, which affects processor selection
- Processor selection directly affects SQL Server 2012 license costs

Licensing Costs for SQL Server 2012

- **SQL Server 2012 Enterprise Edition**
  - Core-based
    - $6874.00 per core (four-core minimum per socket)
- **SQL Server 2012 Business Intelligence Edition**
  - Server license plus CALs
    - $8592.00 per server, plus CALs
- **SQL Server 2012 Standard Edition (you can pick method)**
  - Core-based
    - $1793.00 per core (four-core minimum per socket)
  - Server license plus CALs
    - $898.00 per server, plus CALs
- **Client Access License (CAL)**
  - $209.00 per CAL

SQL Server 2012 Standard Edition

- **Some organizations are forced to use Standard Edition**
  - Usually due to budget limitations
- **Make sure the organization is aware of Standard Edition limits**
  - Many valuable features are not available
    - This makes SQL Server much harder to administer
  - There are restrictive hardware license limits with Standard Edition
    - 64GB of RAM for the Database Engine or Analysis Services
    - Lesser of four sockets or 16 physical cores
- **Don't make the mistake of buying a server that can only use a portion of its resources with Standard Edition limits**
  - Very easy mistake to make with a four-socket server
    - Example: Four Xeon E5-4650 processors would have 32 physical cores

SQL Server 2012 Business Intelligence Edition

- **Great new choice for a SQL Server Analysis Services instance**
  - Allows you to use server-based licensing for SSAS
    - Can be much less expensive than core-based licensing
    - You have to have a CAL for each user or device
  - You can use up to OS RAM limit for SSAS, SSRS, SSIS
    - Windows Server 2008 R2 can use 2TB of RAM
    - Windows Server 2012 can use 4TB of RAM
  - You can also use up to OS limit for logical processor cores
    - Windows Server 2008 R2 can use 256 logical processors
    - Windows Server 2012 can use 640 logical processors
    - Eight-socket machines currently limited to 160 logical cores
  - The Database Engine is limited to 64GB of RAM
    - Ideally, you would have a dedicated machine for Database Engine use
- **Business Intelligence Edition changes your hardware choices**
  - It makes multiple, high core-count processors affordable

SQL Server 2012 Enterprise Edition

- **Best edition of SQL Server 2012 (no more Data Center Edition)**
- **Has highest license costs, but is required for many situations**
- **It has many features that improve scalability and performance**
  - Data compression, enhanced read-ahead, enhanced scanning for reads
  - Automatic use of indexed views, table partitioning
- **It has many features that can help reduce downtime**
  - Online index operations, fast recovery, online restore
  - Database snapshots, resource governor, hot-add RAM
- **Allows you more flexibility in designing HA/DR architecture**
  - AlwaysOn availability groups, asynchronous database mirroring
- **As a DBA or System Admin, you should prefer Enterprise Edition**
  - Try to make the case for Enterprise Edition

SQL Server 2012 Developer Edition

- **Has all features of Enterprise Edition**
  - Only licensed for development and testing usage
  - Lets you develop and test using Enterprise Edition features
    - Table partitioning, data compression, AlwaysOn availability groups
- **Very affordable solution for developer and DBA workstations**
  - Less than $50.00 from Amazon
  - Included with most MSDN subscription levels
- **Free for high school and college students from Microsoft DreamSpark program**
  - http://bit.ly/KkN5F

Additional SQL Server 2012 Editions

- **SQL Server 2012 Express Edition**
  - Free edition
  - Lesser of 1 socket or four-core CPU limit
  - 1GB RAM limit
  - 10GB database size limit
- **SQL Server 2012 Web Edition**
  - Targeted at web hosting
  - 64GB limit for memory for Database Engine
  - 64GB limit for memory for SSAS

SQL Server 2012 Virtualization Licensing

- **To license a VM with core-based licenses, you must pay for the virtual cores allocated within the virtual machine**
  - Requires a minimum of 4 core licenses per VM
- **To license a VM under the Server + CAL model you can buy a server license and the required SQL Server CALs for each user**
  - Only Business Intelligence and Standard Editions of SQL Server 2012
- **Servers fully licensed with Enterprise Edition Core licenses with Software Assurance allow you to deploy an unlimited number of database VMs on the server**
  - You have to buy enough core-based licenses for all the physical cores

Summary

- **You need to know what edition of SQL Server 2012 you will be using during the hardware selection process**
  - This affects your available features and performance
  - It also affect your license costs
- **SQL Server 2012 uses a new licensing model**
  - Core-based licensing is a big change from socket-based licensing
  - Core-based licensing requires you to rethink hardware choices
    - High core-count processors can be very expensive for licensing
  - SQL Server 2012 Business Intelligence edition is a new choice
    - Can save a lot of money for dedicated SSAS instances
- **Licensing rules for virtualization are different than for physical**
  - Make sure you are aware of the differences

What is Next?

- **Module 5 will cover how to choose an appropriate storage type for SQL Server 2012**
  - Considering your workload for storage evaluation and sizing
  - Common storage types for SQL Server 2012
  - RAID levels and SQL Server 2012 workloads
  - The effects of RAID levels on storage sizing and performance
  - Different methods of evaluating storage performance
  - Traditional magnetic storage vs. flash-based storage
  - Storage sizing techniques for performance