WHITE PAPER

Microsoft SQL Server 2012: Potential Game Changer

Sponsored by: Microsoft

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IDC OPINION

The launch of Microsoft SQL Server 2012 has revealed a major new release with many feature enhancements as well as a new software licensing and pricing approach. With SQL Server 2012, Microsoft is offering a new set of streamlined editions that are well aligned with database and business intelligence (BI) needs and an industry-standard pricing approach based on cores:

☑ Pricing per core is a much more granular and consistent metric as customers deploy software in a variety of hybrid IT environments. However, it changes the Microsoft SQL Server cost equation for customers that have been deploying databases on machines with high core densities.

☑ The new SQL Server 2012 pricing approach should make customers look more closely at their hardware strategies and compare the cost of the machine and the benefit of extra performance on high core density machines with the cost of software licensing.

☑ In addition, customers should consider using virtualization technologies as a best practice to help alleviate software license cost — an approach supported by Microsoft's licensing for SQL Server 2012.

☑ Change can be hard. However, by reducing the number of SKUs for Microsoft SQL Server and moving to a metric that has become the standard way of pricing high-end database software, Microsoft has both simplified its approach and developed a way to license that customers consider to be fair and reasonable.

METHODOLOGY

The basis for this IDC white paper is IDC's ongoing research into the best practices of software licensing approaches for relational database management system (RDBMS) software, the dynamics of the RDBMS market, and the specific product and solution attributes that customers believe have high value. Our research includes in-depth interviews with Microsoft customers to understand their drivers for adopting Microsoft SQL Server 2012 and perspectives on the licensing approach.

IN THIS WHITE PAPER

This IDC white paper, commissioned by Microsoft, provides a summary of the new product features of Microsoft SQL Server 2012 as well as the licensing changes that accompany the new release. This white paper also focuses on the changes to customers' IT environments — specifically cloud, virtualization, and multicore — that are contributing to shifts in the ways that database software is being deployed and valued. This white paper also provides recommendations for enterprises that are considering adopting Microsoft SQL Server 2012.

SITUATION OVERVIEW

In the past decade, software publishers have had to reassess machine-based software licensing — including per-server and per-processor approaches — because of seismic changes in customers' IT environments. These changes include the advent and adoption of multicore systems, cloud computing, and server/client virtualization. Many licensing models were developed prior to these changes, and as a result, organizations that are deploying software workloads in today's environments will likely either break licensing or need to license for all the compute power that is theoretically available to them, even if they need that power for only a very short time.

With the launch of Microsoft SQL Server 2012, Microsoft announced a new licensing approach to go along with a long list of product enhancements and new technology. This licensing approach has been simplified and designed to enable customer organizations to carve out their database workload needs and pay in a much more granular and fair way than has historically been the case.

Microsoft SQL Server 2012 — The Product

Microsoft SQL Server is an enterprise-class relational database management system that runs on Windows platforms and features a wide range of data management, data integration (including data quality), and business intelligence capabilities. "Microsoft SQL Server 2012 is a *huge* difference [compared with the previous version of SQL Server]," said one customer at a healthcare firm. "There are a number of new features — not just enhancements to existing features — new components, a new product, and new software built in. With 2012, Microsoft SQL Server is definitely an enterprise-level database platform and is more competitive with other platforms."

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IDC believes that Microsoft SQL Server 2012 is a major new release of this technology. Among its many enhancements are the following key feature areas:

- ☑ **AlwaysOn** for global high availability (HA), including active, multiple secondary database support, double the failover capability of the prior version, and a variety of ease-of-use features

- ☑ **ColumnStore Index,** enabling the caching of query-critical data from the data warehouse in memory-based columnar format and delivering on average 10 times the query performance of prior versions of SQL Server

- ☑ Support for **Windows Server Core** to enable better reliability and more thorough cross-system security through a reduced surface area

- ☑ The new **Power View** browser–based tool, along with enhancements to PowerPivot, providing rapid insight through self-service data exploration, visualizations, and data mashup capabilities (Users can collaborate and share these insights through SharePoint.)

- ☑ A new single **BI semantic model** and **data quality services** that help provide credible, consistent data

- ☑ Support for Big Data through bidirectional **connectors for Hadoop** along with enhancements for creation of massively scalable analytics and data warehouse solutions

- ☑ **Cloud-ready connectivity** built in with features that support hybrid IT (integrating on-premise systems with public/private cloud)

- ☑ Expanded support for unstructured data and greater **interoperability with PHP, Java, and Linux**

Microsoft SQL Server 2012: New Licensing Approach

With SQL Server 2012, Microsoft has designed the pricing approach to better align with the way customers purchase their tier 1 mission-critical database software and business intelligence products. Microsoft is making two main changes for SQL Server 2012 — a packaging change and a metric change.

New Packaging

One of the primary goals for the new Microsoft SQL Server 2012 packaging is simplification. As such, Microsoft is eliminating three of its current SKUs and offering a new set of streamlined editions.

At the entry level, Microsoft will still offer a Standard Edition designed for use with departmental databases and BI projects. There is a new Business Intelligence Edition that is designed to provide customers with access to all of Microsoft's premium BI capabilities as well as the features of Standard Edition. SQL Server 2012 Enterprise Edition is designed for customers that need the features of a tier 1 mission-critical database, OLTP data warehousing capabilities, and other high-end database capabilities in addition to all of the BI features.

Microsoft will be retiring some SKUs, including:

- ☑ Datacenter (its features will now be available in Enterprise Edition)

- ☑ Workgroup

- ☑ Standard for Small Business

Microsoft has designed the pricing approach to better align with the way customers purchase their tier 1 mission-critical database software.

Microsoft will offer a Web Edition of SQL Server 2012, but only to organizations that sign a Service Provider License Agreement. Other editions, including Developer, Express, and Compact, will be available with Microsoft SQL Server 2012.

New Metric

Two different licensing models will be offered for Microsoft SQL Server 2012: Server + CAL licensing and core-based licensing. Server + CAL will continue to be offered for Standard and BI Editions. However, Microsoft has stated that there is a 27% increase in the price of the SQL Server 2012 CAL compared with previous versions. SQL Server 2012 CALs will provide access to BI Edition servers, Standard Edition servers, and legacy Enterprise Edition servers that are upgraded to SQL Server 2012. Microsoft has pointed out that the price for SQL Server CALs has not increased at all in 7 years and has changed only minimally in 11 years, while a significant amount of value has been added to the product during that time. This increase also aligns with the processor pricing increases that occurred with the release of SQL Server 2008 R2.

A hardware capacity model will continue to be offered for Enterprise Edition, which will now be priced per core instead of per processor (see Figure 1). This aligns with how the rest of the software industry prices mission-critical and tier 1 databases.

FIGURE 1

Microsoft SQL Server 2012 Editions

SQL Server Capabilities	SQL Server Editions		
	Standard	Business Intelligence	Enterprise
Licensing Options	Core Based **or** Server + CAL	Server + CAL	Core Based
Windows Server Core Edition Support	●	●	●
Basic High Availability	●	●	●
Basic OLTP	●	●	●
Basic Reporting & Analytics	●	●	●
Programmability & Developer Tools (T-SQL, CLR, Data Types, FileTable)	●	●	●
Manageability (Management Studio, Policy-Based Management)	●	●	●
Enterprise Data Management (Data Quality Services, Master Data Services)		●	●
Self-Service Business Intelligence (Power View, PowerPivot for SPS)		●	●
Corporate Business Intelligence (Semantic Model, Advanced Analytics)		●	●
Advanced Security (Advanced Auditing, Transparent Data Encryption)			●
Data Warehousing (ColumnStore Index, Compression, Partitioning)			●
AlwaysOn High Availability			●
StreamInsight	Basic	Basic	Advanced

Source: Microsoft, 2012

From Microsoft's perspective, increasing levels of hardware capacity and multithreading capabilities enhance the performance and therefore the value of the database server. Per-processor licensing does not take into account hardware performance increases due to higher core density found on large machines. Per core has become the standard for RDBMS software, with competitors such as Oracle and IBM already charging in this way.

Microsoft will sell SQL Server 2012 licenses in 2-core packs, with each core priced at one-quarter of what processor licenses cost today. This means that there is no budget impact for customers running Microsoft SQL Server today on processors with 1–4 cores (there will be a minimum requirement of 4 core licenses per processor). However, there will be a budget impact for customers that are running SQL Server today via the processor model on processors with more than 4 cores.

Pricing per core is a much more granular and consistent metric as customers deploy software in a variety of hybrid IT environments; however, it changes the Microsoft SQL Server cost equation for customers that have been deploying the database on high core density machines. While not every customer that IDC spoke with for this white paper was happy with the change, everyone agreed that per-core pricing is fair.

Support for Virtualization

Many customers are investing in large machines with high levels of core density. Since Microsoft SQL Server 2012 could become expensive for customers using hardware with more than 4 cores, the company advises that customers utilize virtualization technologies to help ensure that they are licensing only the compute power that they need to run SQL Server 2012.

For example, if a customer is deploying a large, centralized private cloud, Microsoft SQL Server 2012 Enterprise Edition with Software Assurance (SA) will provide the customer with the ability to deploy an unlimited number of virtual machines (VMs) if all physical cores are licensed.

In scenarios where customers won't use all the computing power on a server, Microsoft will allow the customer to license software at the individual VM level. This way, a customer can carve out a portion of compute power on a large server and then license just the number of virtual cores that it has created within that virtual operating system environment. Customers with Software Assurance can also freely move that virtual machine around within their virtual infrastructure or move it to a hosting provider and have the licenses move with it.

"This is going to save us money," said one customer. "We don't need to deploy an 8-core machine; we can deploy a VM and get a 4-core license for that application." That said, customers are looking at virtualization not just as a cost savings consolidation tool but also as a management and disaster recovery solution.

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Since customers of Enterprise Edition with SA have unlimited virtualization rights when they license all physical cores, one customer illustrated a money-saving scenario that his company has deployed. The company needed to deploy SQL Server Engine, SQL Server Analysis Services, and SQL Server Reporting Services as three separate servers, which would mean three separate physical SQL Server licenses.

Mixing these components on the same physical box could be a bottleneck problem. The company decided to virtualize this. It licensed one physical host with Enterprise Edition with SA and separated the three components into three discrete VMs, each with its own OS and storage.

FUTURE OUTLOOK

What Does This Mean for Customers?

Microsoft has tried to give customers a reasonable transition time frame, honor current customer investments, and give customers the information and time needed to plan for future investments. Transactional customers will be impacted first; when Microsoft launches SQL Server 2012, Open and Select customers that want to purchase it must do so via the new licensing model. There will, however, be a window of availability after the Microsoft SQL Server 2012 launch — until June 30, 2012 — for customers that wish to purchase Enterprise Edition server licenses in the Server + CAL model. Note that Microsoft has indicated that SQL Server 2012 Enterprise Edition licensed via the Server + CAL model will have a limit of 20 cores per server. This is because the intention of the policy is not for those licenses to be continuously reallocated to higher and higher core density machines as customers bring these into their environments in the future.

Microsoft estimates that, at launch, a large percentage of the install base is running SQL Server on processors with 4 cores or less. Regardless of the size of the machine today, any customer with Software Assurance on that existing hardware can upgrade to Microsoft SQL Server 2012 without needing to migrate to the new licensing until renewal. In addition, customers with SA can upgrade to SQL Server 2012 when they choose without having to shift to the new per-core licensing model for Enterprise Edition until the end of their agreement.

"The value is that SA allows us to upgrade and keeps us up to date with the latest and greatest SQL Server."

For customers that just signed an Enterprise Agreement and have three years before they need to transition to the per-core model, there is good and potentially bad news. The good news is that they will have access to the per-processor pricing model for three years and can deploy these processor licenses on high core density machines that they may use over the next three years. At the end of the three-year period, SA customers will receive a core license that equals the number of cores they are actually using per processor. The potential bad news is that at this point, the number of cores the customer is running probably exceeds 4 per processor, and therefore the SA renewal would be higher.

From a total cost perspective, it is probably beneficial for a customer to stay in the per-processor model as long as possible. However, customers need to budget properly for SA renewal. Customers will also need to much more closely manage their computational needs. One early-adopter customer stated that the company was "fully thinking about upgrading all of our machines; we probably won't do that now. In the past, we have had headroom for growth. That won't be built into configurations moving forward."

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CHALLENGES/OPPORTUNITIES

Software licensing can be complex. By reducing the number of SKUs for Microsoft SQL Server and moving to a metric that has become the standard way of pricing high-end database software, Microsoft has simplified its approach. However, layers of complexity still exist.

In addition, while customers justifiably want simplification, it is possible to simplify too much. In fact, one customer that IDC spoke with pointed out that there is a large price and feature difference between the Standard Edition and the Enterprise Edition, which leaves very little middle ground for those customers that need something a little more than "basic" but not exactly "high end."

Another challenge is that change is hard. After years of pricing SQL Server per processor, Microsoft has shifted toward cores. Although this change is reasonable and fair, according to the customers that IDC spoke with, it can have a big impact on customers' costs in future years. Database servers for high-end, mission-critical usage are typically large machines in terms of cores and memory. Servers with quad-core processors might be utilized for test/development databases, but most customers are going to be running their mission-critical production databases on machines with much higher core densities.

Microsoft's approach to help customers with this hinges on customers virtualizing SQL Server, a scenario that is becoming more common as virtualization technology matures. There are widespread customer examples of enterprises running performance-sensitive applications in virtual environments as well as time-proven accounts of hypervisor reliability and stability running enterprise workloads. In addition, many benchmarks are available in the industry, which can quantify just how far virtualization performance has come.

While VM technology is maturing, customers must determine whether they would prefer to wait for technology to mature in order to adopt or be a part of it early on and work with it slowly. As one customer stated, "Why wait another year [to virtualize SQL Server]? We can live with some limitations; we aren't deploying mission-critical applications, but at least from a learning curve perspective, we are saving money today and learning on the go."

CONCLUSION

Microsoft SQL Server 2012 has received high praise so far, including from the users interviewed for this white paper. The key benefits they highlight include the following:

☑ Greatly improved availability, thanks to the AlwaysOn capability (The Microsoft approach, supporting multiple standby databases, delivers great flexibility in managing incidents, including both planned and unplanned downtime.)

☑ A large inventory of improvements across the board that add up to a major improvement in usability and reliability of the database

◁ BI improvements that have enabled IT to deliver much better planning data to users and have also enabled users to get their own data much more easily (Power View was specifically called out in this regard.)

From a licensing perspective, Microsoft has simplified the number of editions of SQL Server with the launch of 2012 and is now pricing the high-end database offering based on a market-standard metric as well as retaining the Server + CAL model for the Standard and Business Intelligence Editions. Even with a core-based pricing metric and higher CAL price, SQL Server 2012 will still offer an attractive TCO for many organizations. Customers will need to "run the numbers" to determine the specific impact of the new pricing on their costs. Those with Enterprise Agreements will have some time to do this but should budget appropriately for renewal time.

IDC doesn't expect to see a customer exodus or revolt as a result of the licensing change. However, this new approach should make customers look more closely at their hardware strategies and compare the cost of the machine and the benefit of extra performance with the cost of software licensing.