An IT Strategy to Support the **Modern Analytics-Driven Business**

Optimizing the deployment of "analytics-ready" infrastructure

WHITE PAPER

A fundamental change is afoot in how organizations operate and what drives success. Business analytics tools, and the ability to use them more effectively than the competition, will determine who is a digital predator and who is digital prey. As the renowned business theorist Geoffrey Moore noted, "Without big data [and] analytics, companies are blind and deaf, wandering out onto the web like deer on a freeway."

For IT organizations, the requirement for high-performance systems and analytics tools that work with petabytes of information is not a good match for legacy infrastructure and IT strategies. And forward-thinking IT organizations are developing new infrastructure strategies to better support high-value analytics workloads.

A successful IT strategy starts with the realization that analytics workloads will increase substantially over the next two to three years. Many companies can barely support the limited number of current analytics workloads that run on legacy IT systems. Doubling or tripling the number of these high-value applications using older hardware is just not possible. The company needs IT to develop an appropriate infrastructure strategy and identify the products to support it. Successful IT organizations will invest in analytics platforms that have long-term strategic value to ensure their companies are not "aiming where the puck is now, but where it is going." Tactically, IT must quickly and efficiently deploy this new strategic infrastructure, leveraging products that have been designed to meet the needs of many diverse analytic workloads both now and for the future.

DELL EMC Microsoft Windows Server TechTarget Custom Media

Legacy infrastructure is not well suited to support the analytics-based business

The wholesale adoption of analytics as the enabler of digital business is a major sea change in terms of what workloads demand from IT infrastructure. Unlike in the past 10 to 15 years when performance and capability demands increased marginally, analytics requires a step function increase in the capabilities of IT infrastructure. The most obvious factor driving this change is the amount of data being used to support high-value analytics workloads. IDC predicts that the "digital universe" (the amount of data created and copied each year) will reach nearly 50 zettabytes by 2020, growing to 180 zettabytes by 2025.

Not only is the amount of data growing exponentially, but the performance required to sift through this huge amount of data is also increasing rapidly. The result of this fundamental change is that legacy infrastructure is often not configured effectively to meet the demands of an analytics business in the near term or the future. Many IT organizations have been able to scramble and meet demands for "Analytics 1.0," but the next generation of workloads will require new infrastructure capability.

The software platform is a critical component of the analytics-driven business. One of the most capable platforms for modern analytic workloads is Microsoft's SQL Server 2016. This version provides many new and enhanced features that are specifically focused on better support for analytics. And the announcement of the latest version of this product, SQL Server 2017, is just around the corner. The increased release frequency of new versions demonstrates a commitment to providing a best-in-class analytics solution. Customers may want to use Microsoft's Software Assurance (SA) program to maximize their investment in this platform due to the increased frequency of new releases.

The analytics software platform must be able to support not only the highly trained data scientist, but also a broad range of employees who will perform analytics tasks. In much the same way the explosion in the number of telephones made it impossible to route all calls through an operator, the explosion in the number of high-value analytic projects will make it impossible for all of them to be completed by the very limited number of data scientists in organizations. Software must enable the "citizen data scientist," which is a key capability of SQL Server 2016. To do this, Microsoft has included important new features, such as the following:

- **SQL Server Analysis Services (SSAS)** – SSAS provides improved online analytic processing, data mining and reporting.
- **Improved reliability** – The importance of a reliable and available platform for analytics cannot be overstressed, as it becomes the driver of the business.
- **Enhanced data encryption** – As cyberthreats increase and the focus on data theft becomes the primary goal of hackers, data encryption is an essential component of a secure environment.
- **Mobile Business Intelligence (BI)** – Mobile BI delivers the ability to make analytics and reports usable on any mobile device, with solutions for different screen sizes.

The other essential component of next-generation IT infrastructure that can meet the requirements of the analytics-driven business is the server infrastructure. The large increase in the number of high-value analytics workloads that will occur in the next 12 to 24 months demands that servers have the latest technologies and capabilities. These include the following:

- **Performance** – Analytic workloads will be very processor/memory intensive, demanding the highest levels of performance and capacity. Older servers were never designed with this kind of workload in mind and will likely come up short trying to meet the necessary service levels.
- **Non-volatile dual in-line memory module (NVDIMM)** – NVDIMM is far faster than traditional DRAM by an entire order of magnitude. This technology accelerates workloads and provides an additional tier of memory that has persistency based on the use of non-volatile memory.
- **Solid State Drive (SSD) options** – The latest generation of servers, particularly the Dell EMC 14G products, offer higher-performance and larger-capacity SSDs that provide a substantial performance boost for analytic workloads, particularly when compared with older servers using traditional storage.
- **Support for hyper-convergence** – The benefits of hyper-converged infrastructure (HCI) are very attractive, but only the latest servers have been designed to support this type of deployment. Trying to update older servers and combine them with other components to form an HCI solution is likely to be overly expensive and unsuccessful.

Moving at the speed of business: Deploying SQL Server 2016 on new hardware is the best approach

One of the fundamental questions facing organizations that want to deploy new analytics tools such as SQL Server 2016 is whether to deploy them on new hardware or retrofit the tools onto existing servers. The complexity of upgrading combined with the enhanced capabilities of new servers makes the answer very clear. Using new servers is highly preferable.

Perhaps the most important reason why new servers are the best choice is the cost and complexity of trying to upgrade existing servers. Replacing the current software on existing servers can be a very time-consuming and frustrating process for the IT administrators and operations staff who must complete the project. Regular duties may suffer as substantial staff attention is diverted to complete the upgrade.

It is important to understand that the time frame needed to complete an upgrade can be quite substantial and resource intensive. IT organizations may appear slow to respond based on the actual amount of time required to complete the retrofit process. The project may require several "install/test" process iterations because new issues often crop up each time the old server is tested with new software. These flaws are often remediated one at a time. And once the new software is installed, there is often a domino effect where the new software installation results in problems for other software products running on the server. These problems must then be fixed.

Once the system is up and running, IT often discovers the initial sizing estimates for the server to ensure necessary capacity were not correct due to unforeseen, conflicting resource demands from other workloads running on that server. If this problem is severe, it may force the team to start over from scratch, wasting all of the time invested installing the new software.

Last, there is the fallacy that installing new software on older servers saves money. However, looking at the actual staff costs, any savings might be minimal or non-existent. Many sources peg the average annual salary of an IT administrator at about $70,000, with a fully loaded cost of $125,000. If a retrofit project takes 80 hours of administrator time to complete, the hard dollar cost to the organization is more than $5,000. There are also opportunity costs because that administrator may be forced to ignore regular duties, impacting operations.

Another reason to use new servers for your SQL Server 2016 deployment is to ensure that deploying this new platform does not create any risk to current production workloads. Using new servers allows the IT staff to ensure the new platform is up and fully functional, including details such as the configuration, security, and other operational requirements, before it is put into production. In addition, the new server approach allows users to formally test the analytics platform before it is put into production so that any hidden application issues can be remediated.

The final point that argues for using new server infrastructure is the ability to leverage known, good reference architectures and pre-configured systems. Dell EMC has several options, including its Ready Solutions, that offer different levels of pre-configured alternatives. This approach saves substantial IT staff time that would be wasted doing basic integration tasks that add little value. These offerings also have known performance and capability levels, ensuring that the IT organization is maximizing its spend on new hardware, buying exactly the capacity that is needed. There are also IT time savings because these configurations have already been tested and debugged by high-level engineers, assuring a valid installation.

A comprehensive upgrade will delight your customers, too

In addition to the many ways analytics improves the success rate of the business by optimizing and informing operations, this capability also improves the customer experience. The use of analytics to personalize the customer experience and enhance the interaction with the customer is already well underway. As a result, many organizations are embarking on new and more impactful analyses that will increase the benefits that customers are already seeing.

One of the most important new ways that analytics helps the business and the customer is by accurately identifying "high-value" customers to provide better service and optimize the business relationships. The flip side of that coin is how analytics also identifies poor products or those that have a high incidence of service calls or other indicators that make remedial action necessary.

The Dell EMC 14G server advantage

Dell EMC has conceived a comprehensive server offering with its new 14G product line that provides an ideal platform for SQL Server 2016 and 2017. From a pure performance perspective, the Dell EMC PowerEdge R740 provides a huge increase over the previous generation. The PowerEdge R740 server running a Microsoft SQL Server 2016 OLTP workload, when compared with R730, delivers a 41% increase in transactions per second, a 50% increase in user load and a 50% reduction in average query response time.[1]

And Dell EMC provides a broad range of services to augment this high-performance hardware. These services offer greater value and differentiate the Dell EMC server offering from many of its competitors. Dell EMC offers a range of services that map to the entire lifecycle of the server, from initial consulting and configuration services, to deployment and testing services, followed up by support services to ensure years of trouble-free use. In addition to these services, the Dell EMC Ready Solutions group offers pre-configured and pre-tested solutions that support specific workloads and software platforms. Customers can choose from a range of Ready Solutions, from basic pre-configuration to out-of-the-box, ready-to-use systems.

To help you manage the cost of your SQL upgrades, Dell EMC are experts at leasing and financing the solutions your business needs to succeed. Dell Financial Services offers its customers a dedicated account team, fully integrated order processing with Dell, and one-stop shopping for your technology financing needs—including consumption-based payments for maximum flexibility. With trusted technology solutions from Dell and payment solutions from Dell Financial Services, you can get performance that won't break the bank.

Summary

Today's digital businesses are managed using critical business analyses that provide far greater insight into the business and how to maximize results. However, these high-value applications that use the latest software tools demand far more from IT infrastructure, as they utilize an order of magnitude more data and demand more compute resources than legacy applications. Legacy systems are no longer capable of meeting the present and future needs of the organization.

The combination of Microsoft's SQL Server 2016/2017 and Dell EMC 14G servers provides an optimal solution for a next-generation analytics platform. Coupled with Dell's end-to-end services and a range of pre-configured/pre-tested Dell EMC Ready Solutions, it is now easy to take the most cost- and time-efficient path of deploying SQL Server 2016 or 2017 on new hardware. This approach also enables the organization to deploy more high-value analytic workloads faster. The ability to better utilize analytics is an important competitive advantage, and Dell EMC and Microsoft provide the "raw materials" to beat the competition.

1 Based on a Dell EMC Engineering study using the TPC-E benchmark to test Microsoft SQL Server 2016, August 2017. Actual performance will vary.

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For more information on Dell EMC PowerEdge Servers, visit:
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