The Business Case—Migration to Windows Server® 2012 R2 with Lenovo Servers

New levels of integration and capabilities provide the foundation for building more successful businesses with this new infrastructure

The latest major release of Microsoft Windows Server 2012 R2 has numerous technical advances, but it is also focused on providing the foundation for helping businesses achieve success. This white paper will examine the key benefits that can be used to lower costs, increase security and improve the "speed to solution" in ways that are not possible in older versions. The new version of Windows Server is designed to work better with new hardware, such as Lenovo ThinkServer and System x servers, that are designed to provide larger and faster memory subsystems for virtualization, improved network connectivity, more efficient and effective IT operations and more storage features built into this version. Updating this infrastructure results in better security and compliance, especially in light of support for Windows Server 2003 ending, improved performance and service levels, and substantial gains in efficiency.

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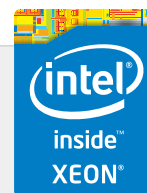
How Windows Server 2012 R2 improves business results

Lowering the cost of IT infrastructure

One of the most important business benefits that any IT solution can provide is lowering the cost of IT to improve profitability. There are some proven ways that Windows Server 2012 R2 can reduce IT's operating expense, the most obvious being the use of expanded virtualization capabilities found in this new version.

The new release offers "larger" virtual machines that can now host the most demanding applications that often suffered from poor performance in prior versions of virtualization hypervisors. As a result, these demanding workloads were not moved to virtual infrastructure. This results in greater savings from an increased level of virtualization.

When the infrastructure is virtualized there are a number of ways that operating expenses are reduced. First, virtual implementations require fewer physical servers and this results in lower maintenance contract costs, less power and cooling required, less IT resources and staff needed for management and administration, and far lower cost of disaster recovery and failover.

A second benefit to Windows Server 2012 R2 is that **it incorporates a far greater level of operational automation** in terms of regular administration and management. Of course the savings will depend on your specific environment, but the potential to lower the human resource requirements on a key platform such as Windows Server gives an organization the flexibility to put those resources to work on new solutions that can be of greater benefit. This helps solve the problem that many IT organizations have where 70-80% of all IT budget resources are spent just running existing systems.

The final method of lowering IT costs that will be examined in this white paper is the storage cost savings possible with Windows Server 2012. One of the technical benefits of this new version is that **it can work effectively with lower cost storage solutions**, as opposed to the higher-priced fibre channel storage area networks (SANs). There are very different cost levels for different types of storage and fibre channel SANs are among the most expensive. By utilizing lower cost storage, Windows Server 2012 R2 can help IT keep costs down from both a capital and operating cost perspective.

Support for peak workloads without large hardware investments

One of the problems that every organization faces is the problem of having to deploy IT infrastructure that can provide support for the peak load that may be seen for any application or solution. This can add up to a lot of extra hardware that is sitting "idle" waiting for the peak load to occur. The problem is that you still have to pay for this hardware; powering it, cooling it and maintaining it as well.

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The effect of mobility and BYOD cannot be ignored.

This is true even if it's needed only 10% of the time. Windows Server 2012 R2 has incorporated load balancing and live migration features that improve scalability and limit the need to "over build" server infrastructure to meet peak demands.

One of the most important ways that Windows Server 2012 R2 helps reduce the need for building hardware to meet individual peak loads is through virtualizing infrastructure. Treating all the server capacity as a "pool" that can be directed to any application that is virtualized allows IT management to take computing resources (compute power, memory, or bandwidth) from an application or workload that has lower demand and redirect those resources to an application that is hitting a peak or experiencing high demand. This capability can also be automated so that there is no noticeable impact on users of the application when it is moving toward peak loads.

The second capability in this new version of Windows Server is network load balancing (NLB). This feature allows for using additional servers when the network traffic to one server exceeds capacity. If one server is inundated with 140% of its network capacity, using NLB, the workload can be shared by directing it to a second server. The average load per server then drops back to 70% of capacity. As a result, users receive good performance, even during times of high utilization or traffic load. Administrators can set load limits and automatically add resources to a specific server or load when a peak goes past the limit. This automation also helps keep IT operations costs lower.

Simplicity and increased efficiency for "work from anywhere"

The effect of mobility and BYOD cannot be ignored and Windows Server 2012 R2 offers some very important new features to help organizations deal with the issues of access, authentication and data security. Among the most prominent aspects of the new version is Windows Intune. This product provides key features and integration points that benefit an enterprise facing BYOD pressure. The features tend to cluster around providing **secure access for any device that a user may choose.** Intune provides device security and compliance management which simplifies this process, lowering the costs of compliance. Intune also has an "auto-discover" feature to find mobile devices that are attaching to your network to ensure that rogue devices are not authorized. It is also a plus that the Intune device management functions can be run on the Cloud, or on premise. In terms of integration, Intune can simply link with Active Directory, which is often the core product for tracking individual users, their privileges and the groups they belong to.

The new Workplace Join feature also leverages Active Directory (AD). Workplace Join creates an AD entry for a user's personally owned device and then provides an authentication "certificate" that gives that device access to files on corporate servers. This makes it far easier for a remote user to work with their corporate files and information. Another important feature that supports the idea of better enabling the ability to work from anywhere is how Windows Server 2012 R2 supports wireless printing. One of the most frustrating scenarios for mobile
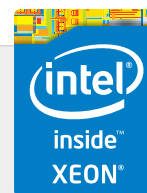
users is when they cannot print. This is common in sales situations. Internet Printing creates a web site where users can run print jobs when away from their office by using Windows Server 2012 R2. It also enables users who have Internet Printing Client installed to use a web browser to connect and print to shared printers on the server by using the Internet Printing Protocol (IPP).

Providing increased security through virtual desktops

Data loss and the fear of highly sensitive information being compromised is one of the chief concerns of today's boards of directors. The loss of sensitive data would create a business nightmare for many organizations. The results of a loss range from having to make public disclosures, to lost business and the potential for substantial legal or regulatory compliance problems. Protecting this data is essential and more organizations are looking to desktop or client virtualization to keep this sensitive information in the data center and away from mobile devices.

Windows Server 2012 R2 has a comprehensive virtual desktop offering within the product for Windows mobile devices that is not only cost effective, but simplifies the administration and management of virtual clients by using the same Hyper-V tools as are used for server implementations. It should be noted that to support iOS and Android devices, you will need to add a 3rd party Remote Desktop Protocol (RDP) solution. Using this approach, you can keep sensitive files in the data center and the impact of lost or stolen devices is mitigated.

Speed matters — Reducing the time needed to deploy new IT solutions

The speed of business has increased dramatically in the last 5 years. The ability to create a competitive advantage, respond to a systemic issue, or implement new business processes can **determine the success or failure of an organization.** As a result, it is critical that your core IT platforms are able to meet your need for speed. This is an area where Windows Server 2012 R2 can really make a positive difference.

Among the single most important aspects that impact the speed with which an IT solution can be deployed is the ability to find knowledgeable staff or resources that can build the solution. **Microsoft has more than 8 million certified professionals,** a testament to the depth of the resources. This also speaks to the ease that an organization will have in finding or retaining expert staff that can provide a Windows Server-based solution quickly. An additional benefit is the number and breadth of 3rd party add-ons and aligned products that work with Windows Server. These can improve the quality of solutions provided by Windows Server 2012 R2, such as adding tools for RDP as noted above.

The second aspect of Windows Server 2012 R2 that makes it a platform for rapid deployment is its level of integration with other tools. Active Directory (AD) is an excellent example. Using AD, a developer can leverage a known and accurate list of employees and their privileges as the basis

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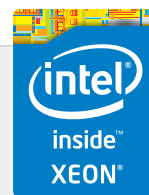
for providing services in a new solution. There is also the ability to leverage the Cloud with Azure for providing peak load services, basic infrastructure and even data management and back-up. There are also strong ties with Office 365 for end user-focused applications. **The simplicity of integration helps reduce the time needed to complete and deploy projects.**

How Lenovo servers provide additional business value for migration to Windows Server 2012 R2

There are many elements of the business case that are supported by migration to Windows Server 2012 R2. Implementing this upgrade on servers provides even more benefit to the organization that makes it run more efficiently and effectively.

Increased server efficiency

Lenovo ThinkServer and System x systems with Windows Server 2012 R2 provide the infrastructure needed for a secure and resilient cloud foundation, including improvements in network integration and breakthrough storage economics. Using Lenovo servers, **your IT group can replace multiple older servers and consolidate them onto fewer, newer servers** using Windows Server 2012's virtualization capability. This function has been enhanced to support more demanding applications that have resisted prior virtualization attempts. The latest next gen Lenovo servers offer far greater I/O and storage flexibility and capacity.

Lenovo has highly competitive pricing for their server lines. In addition, Lenovo servers include many options/features at no additional cost. Lenovo offers branded Microsoft OEM Windows Server 2012 R2 licensing to save you even more.

It is also very important that your new servers don't require additional resources to work in your organization. Lenovo servers are based on industry-standard technology and can be managed by existing management tools, eliminating re-training costs and providing easy integration into existing environments.

High performance for today's needs

Lenovo servers running Intel® Xeon® E5 processors and Microsoft Windows Server 2012 R2 can increase performance more than 5× when compared to platforms from 2007 running on Windows Server 2003. **The demands of new applications are far beyond what many older servers can provide.** It is essential to have the performance and responsiveness your business needs. The latest Intel Xeon processors found in Lenovo servers offer larger cache sizes, improving system responsiveness for superior performance so that more employees can work at the same time, or to support faster access to business critical information while working in branch and other remote locations.

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Faster memory speeds and larger capacities increase the likelihood of system memory errors, but Lenovo servers with Intel Xeon processors are equipped with Error Correcting Code (ECC) memory which prevents data corruption and system crashes by finding and **fixing 99.998% of memory errors.**

Increasing IT security and supporting compliance demands

One of the most important reasons to start your migration to Windows Server 2012 R2 now is that support for Microsoft Windows Server 2003 is ending soon. This means that patches for security vulnerabilities that arise will no longer be provided automatically and free of charge, potentially leaving your outdated system vulnerable. Windows Server 2012 R2 on Lenovo servers provides the modern security hardware features of the Intel Xeon processor such as fast, low-overhead encryption, high-quality security keys and secure key storage, along with Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI).

Summary

Any new technology initiative or purchase must meet the requirement of providing enhancements that will drive business success. Windows Server 2012 R2 does this in a number of ways that are showcased in this white paper. The technical benefits of this new release are strongly aligned to the overall demands that organizations are making on their IT departments. The result is a platform well positioned to be effective far into the future, continuing to deliver ROI for years to come.

Sources

- Davis, David. "Top 5 Benefits of Hyper-V for Windows Admins." *TrainSignal.* 9 Jan. 2013. Web.