



# Guitars, Operating Systems, and Technological Evolutions (or Revolutions?)

Forecasting the Impact of Microsoft Windows Server 2012 R2



*This is the first in a four-part series from Dell describing the vast potential of the new Microsoft Windows Server 2012 R2 operating system.<sup>1</sup> Additional topics will include strategic and tactical choices in migrating to the new OS from Windows Server 2003, the most efficient tools for the job, and how your team can handle inherent challenges.*

**Evolution or revolution?** It's an age-old debate with thousands of examples, especially when it comes to technology used in many walks of life, from business to music. Take George Beauchamp as an example. In 1925, he experimented with guitar string, a piece of wood, and a magnetic pickup from an electric phonograph. Over the course of six years, his work evolved from tinkering in his dining room with a motor from his wife's sewing machine to combining his inventiveness with the vision of another engineer, Adolph Rickenbacker. Together, they created the first commercially viable electric guitar – the Rickenbacker – a favorite instrument for pioneers such as the Beatles, clearly an evolution, and a revolution that continues to impact all types of popular music.

Fast-forward 83 years and we've got so many technological evolutions that we can't keep up. Many are transient, fads really. Others are enduring cornerstones that shape the way we live, how we express ourselves and how we conduct business.

<sup>1</sup>While there are plenty of promising features in Microsoft Windows Server 2008, 2008 R2, and 2012, for brevity sake, we have chosen to focus on 2012 R2.

This brings us to one of the biggest business-technology evolution stories of the decade: Microsoft Windows Server OS migration. More than 23 million servers in the world are still running on the Microsoft Windows Server 2003 operating system, making it the most popular engine for serving information and applications globally for over a decade. But, starting in July 2015, Microsoft will no longer provide basic support for it.

There'll be no more patches or bug fixes for the old operating system. IT departments still running Windows Server 2003 will be out of compliance with various standards and regulations, potentially keeping businesses and organizations from making credit card transactions, isolating them from critical vendors and channels. Old applications and vital system security may be at risk. Maintenance costs for aging hardware may skyrocket.

#### **Challenge and Opportunity**

OS migration will prove a major undertaking, even for the most sophisticated IT organizations. For example, many IT departments do not have a comprehensive asset management database detailing all of the hardware, software and interdependencies in their data centers. They'll have to perform discovery to find out what's out there. Only then can they select the optimal migration approach for each server. That means in complex environments, it can take hundreds of business days to audit, analyze, plan and refresh hardware and software, all before migrating the actual operating system and applications. The process could be labyrinthine and full of potential risks.

But, done properly, the payoff can be revolutionary.

Why? Because of all the benefits that this new OS enables and the new fundamental tool-set that will underpin the next generation of business

practices. Because in one way or another, in both our personal lives and in business, we are all riding a wave of IT evolution, and the new Windows Server OS will be right in the middle of it – taking place in data centers across the planet.

#### **Is there really an IT evolution?**

Consider these forecasts.

In a recent white paper, the experts at McKinsey Global Institute discuss disruptive technologies and their potential economic impact. They list the top four disruptions as mobile internet, automation of knowledge work, Internet of Things (IoT), and cloud technology. McKinsey says these will potentially generate \$14-30 trillion in annual economic impact, with adjacent values in the forecasts such as a 10-20% cost reduction in treatment of chronic diseases through remote health monitoring.<sup>2</sup>

Dig a little deeper and you will uncover more IT growth. Gartner expects the platform as a service (PaaS) market to reach almost \$7.0 billion in 2018, up from \$2.5 billion in 2013. The potential increase in spending for PaaS technologies is an average of \$900 million per year from 2013 through 2018.<sup>3</sup>

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But growth is not the only story. Peel back the layers of IT projects and you'll likely uncover "standardization." IDC points out that many organizations are "...already on a trajectory to minimize the number of operating system versions in use and reduce the variability of the configurations for each version"<sup>4</sup>

And what about the impact to our lives? After all, shouldn't this growth and standardization in technology drive positive changes in the quality of our existence? McKinsey's forecasts go on to predict that, because of these disruptive technologies and this growth, by 2025:

- 2-3 billion more people will access the Internet
- To sequence a human genome, it will take 1 hour and cost \$100
- 1.5 million driver-caused deaths will be averted by autonomous vehicles
- 100-200% potential increase in North American oil production
- Potential share of solar and wind power for global electricity generation will be 16%

And which operating system will serve as the driver behind a large percentage of these disruptive technologies, these positive changes in our lives? Which operating system will IT leaders choose for standardization?

With the Microsoft Windows Server OS covering 73% of the server install base by the end of CY2014, Windows Server 2012 R2, will certainly weigh heavily in the mix.<sup>5</sup>

How? What's in the new OS that drives potential value to your business or organization?

### Evolution Meets Revolution

A lot has changed in eleven years. Windows Server 2003 has proven itself an enduring workhorse, but 2012 R2 offers important features:

### Efficiency

- Storage enhancements, known as *Storage Spaces* will enable grouping virtual drives together in a storage pool that can be used and managed like any other drive, and will enable simple mirroring to protect from drive failure, thus reducing overall storage costs.
- Vast improvements in *Windows PowerShell* will increase the server-to-administrator ratio and reduce the complexity of multi-machine management.
- *Cluster-Aware Updating (CAU)* automates software updating—a task that used to take hours—on clustered servers while maintaining availability.
- *Work-style Flexibility* – Microsoft's Virtual Desktop Infrastructure (VDI) will enable the deployment and management of remote desktop services, providing employees the flexibility to work anywhere, any time. They'll have access to the appropriate environment in the data center from a range of devices.
- *RemoteApp* – Remotely accessed applications that look as if they are running on the end user's local computer will enable personalized, consistent, and secure experiences for users, while also improving compliance through centralized control and access to confidential data.
- *Cloud Enabling* – Hyper-V virtualization capabilities will reduce costs by enabling the consolidation of more workloads on fewer servers—reducing consumption of resources such as power and physical space—while supporting the agility of either private, public or hybrid clouds. In a virtualized environment, IT can minimize the impact of both scheduled and unscheduled downtime. And, can use virtual machines to reproduce different computing environments for testing and troubleshooting.

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### Windows Server 2012 and Its Promise for New and Growing Businesses

What is your server environment like? Are you just getting off the ground and running only one or two servers? Or, have you been growing for a while? Do you have more than 25 users?

Depending on your answers, you may choose either Windows Server 2012 R2 Standard or Essentials.

The Standard edition now includes all the Essentials features and functionality. It enables increased virtualization technology with the ability to run two virtual machines and the potential to run more with additional licenses. The Standard edition also lets you run virtual desktops (VDI) providing a more flexible work environment. And Office 365 integration can scale beyond 25 users.

Windows Server 2012 R2 Essentials is designed for smaller businesses. It is an ideal first server OS and vastly more capable than a simple network-attached-storage (NAS) solution for up to 25 users. Essentials provides great options that allow you to remotely access your files and folders, connect to PCs in your office to run applications without any virtual private network (VPN) hardware investment. And it integrates with cloud technologies like Office 365 and Windows Azure.



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- *Directory Management Friendly* – Active Directory (and its adjacent services) is full of new features that enable secure access to corporate data from personal devices, that make it simpler and faster to deploy domain controllers (both on-premises and in the cloud), and that are easier to manage, either locally or remotely, through consistent graphical and scripted management experiences.

And we are just scratching the surface. In their review, “10 Things We Love About Windows Server 2012 R2” Network World wrote: “Microsoft has released a compelling operating system update that’s targeted directly at its virtualization and cloud competition. Here are 10 things we like about Windows Server 2012 R2: cloud integration, Linux support, Hyper-V, integrated management, UEFI in, BIOS out, VHDX disk stores, IP address management, software defined networks, easier to use, and virtual network switching.”<sup>6</sup>

### **Transformations**

As you can see, the repercussions for continuing on Windows Server 2003 could be harmful, while the benefits of migration are undoubtedly positive. This is a rare opportunity to develop a clear picture of everything in your data center, to optimize the use of virtualization and cloud, and to exploit dozens of additional new capabilities. Plus, the right partner, with clear processes, robust automation tools and proven methodology, can dramatically accelerate the migration, remove cost, and lower risk.

Like Beauchamp’s electric guitar, the evolution of Windows Server 2012 R2 did not happen overnight—it took years of research, design and development. But the potential impact is compelling. Disruptive technologies and all the positive advancements that they foster aren’t happening overnight, but the changes, the advancements—all part of our technological evolution—have great potential for good.







McKinsey sums it up: “While we agree that significant challenges lie ahead, we also see considerable reason for optimism about the potential for new and emerging technologies to raise productivity and provide widespread benefits across economies.”<sup>7</sup>

We believe these widespread benefits will likely have their footing deep in data centers around the world, and therefore in Windows Server 2012 R2, the revolutionary evolution of an operating system.

After years of developing electric guitars and amplifiers, George Beauchamp decided to retire from the hectic industry and spend more time perfecting fishing lures. When he passed away in 1940, his funeral procession was over two miles long. Decades later, a disc jockey asked George Harrison if he liked the guitar he had played during a radio performance. Harrison quickly replied, “Of course, it’s a Rickenbacker!”<sup>8</sup>

What will be the impact of Windows Server 2012 R2?

#### **Dell, Microsoft Gold Partner**

Dell has a proud history as a recognized Microsoft Gold Partner: Microsoft Windows 8 Application Developer Partner of the Year, Education Devices and Mobility Partner of the Year, Windows Team: Deployment Partner of the Year (for the third consecutive year,) Enterprise Partner Group (EPG) Alliance Partner of the Year, East, West & Central US Regions, all in 2014

#### **Next Steps**

For more information about our Windows Server 2003 Migration services, visit [www.dell.com/2003migration](http://www.dell.com/2003migration)

Windows Server 2012 R2 runs only on x64 processors. For more information visit: [www.dell.com/servers](http://www.dell.com/servers)

