



## WHITE PAPER

# Windows Server 2003: Why You Should Get Current

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Al Gillen  
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## IDC OPINION

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Extended support for Windows Server 2003 will end on July 14, 2015, and customers are once again looking at the final months of a generous Windows product support cycle. IDC's observations and recommendations for customers using Windows Server 2003 include the following:

- As with the termination of Windows XP extended support, which took place in April 2014, Microsoft faces a scenario where a meaningful portion of its product installed base remains on a product that has been replaced multiple times. In this case, Windows Server 2003 has been replaced by Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, and Windows Server 2012 R2. The time has come for customers to take this conclusion of a lengthy life cycle seriously and make near-term plans to begin a migration plan.
- Unlike Windows XP, where there were application migration challenges that created barriers for some customers to move forward to a newer product, Windows Server 2012 R2 offers relatively good application compatibility with Windows Server 2003. Although Windows Server 2012 R2 is delivered as a 64-bit operating system, most 32-bit applications that have no 16-bit code segments should install and run on Windows Server 2012 R2 through Windows on Windows 64 (WoW64) technology. The main exception to this compatibility story is for applications that operate in kernel mode rather than user mode. Security applications and some system utilities such as backup and management agents are among the applications that are likely to need an upgrade as part of a migration to Windows Server 2012 R2.
- Windows Server 2012 R2 offers a lengthy list of improvements compared with Windows Server 2003, including integrated virtualization, better security, extensive scalability, new operational roles, script execution capabilities, and far more. While it is a substantial learning curve to move directly from Windows Server 2003 to Windows Server 2012 R2, customers are well advised to not make an interim upgrade to Windows Server 2008 as that product is facing end of mainstream support in January 2015.
- Customers that go beyond the termination of extended support place themselves at potential security risks and potentially in a regulatory noncompliance situation. Even if regulatory compliance is not a concern, the security improvements that Windows Server 2012 R2 offers are worth adopting if just to help defend against industrial espionage.
- The deployment paradigm has changed, and today's servers are usually virtualized first. Many customers deploy virtualization-friendly SKUs like Windows Server 2012 R2 Datacenter, which greatly simplifies licensing and deployment concerns in a virtualized environment. This approach leads to long-term capex savings as virtual machine (VM) densities grow.

## IN THIS WHITE PAPER

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This IDC white paper considers the approaching end of extended support for Windows Server 2003 and explores the Windows migration options that are available to customers and the benefits associated with a modernization effort. It also evaluates the risks that customers face if they do not move off of Windows Server 2003 prior to the conclusion of extended support.

## SITUATION OVERVIEW

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Being the market leader has its downside, and because of its massive installed base of server operating systems, Microsoft often finds its products held to a higher standard than competitive products. With Windows accounting for 73% of server operating systems installed on servers at the end of CY14, it is clear that any action affecting a Microsoft product will affect a wide swath of customers.

Today, customers that have delayed updating and modernizing their Windows Server 2003 installations are facing a harsh reality: The end of extended support, which is coming alarmingly fast, will be on July 14, 2015.

The story started much earlier, when mainstream support for Windows Server 2003 terminated on July 13, 2010. There are clear differences between mainstream support and extended support phases. Mainstream support offers paid incident support, security updates, non-security hotfix support to all customers (which is a paid-for option during the extended support phase), no-charge incident support, warranty claims, and design changes/feature requests.

Today, Windows Server 2003 is in the extended support phase, which offers a continuation of certain mainstream support items such as paid per-incident support, security updates, and ongoing use of the Microsoft Knowledge Base. However, during the extended support cycle, non-security hotfix support terminates (unless customers specifically purchase that offering), no-charge incident support is eliminated, and design changes and feature requests are no longer offered.

For some customers, there is little perceived differentiation between the mainstream support phase and the extended support phase because the things that concern them most, such as having ongoing security hotfix support and paid per-incident support, continue to be available.

Once extended support expires on July 14, 2015, all these support activities will be eliminated. Microsoft does offer for-fee custom contracts – which extend for a limited period beyond the termination of extended support – to customers that are actively working to migrate to a next-generation product. This option is not for the faint of wallet and is intended only for organizations that are making a proactive effort to migrate off the product being supported beyond its normal life cycle. It is not intended to be an open-ended support offering to all customers to retain Windows Server 2003 installations in current deployments for the long term.

For the rest of the customer base, which may not be able to purchase or may not be interested in purchasing custom support options, the end of extended support has significant implications for their Windows Server installations. These systems fall into a non-supported mode, meaning there are no

further security fixes, there is no incident support available from Microsoft, and, equally important, servers used in environments requiring regulatory compliance may find it impossible to meet regulatory requirements, leading to an out-of-compliance condition.

The reality is that, for many customers, this is about more than just Windows Server 2003. Given the age of the installation, the chances are high that other software products beyond the operating system are aging. The list of products that customers may be concerned about would include applications, middleware, database products, and management tools, all of which may be approaching or already past their supported life cycles, leaving customers at even further potential risk should a problem arise. Regulatory compliance and support life cycles are not purely operating system issues.

Some of the key concerns customers face after the conclusion of the extended support cycle are as follows:

- **Lack of patches/updates/non-security fixes.** No-cost, non-security-related update support terminated on July 13, 2010. However, support for non-security-related updates was available on a for-fee basis to customers that felt it was important to continue to have access to fixes that could help their system run optimally and perform well.
- **Elimination of security fixes.** Customers see security fixes as being among the most critical fixes for their installed servers. These fixes will no longer be delivered to customers for their Windows Server 2003 servers, regardless of how severe a given issue may be. This may be less of a problem with many aging Windows Server 2003 applications, mainly because the applications still in use are increasingly likely to be inward facing rather than outward facing.
- **Lack of support.** Customers no longer have the ability to contact Microsoft for technical support in the event of a server problem. This becomes particularly important when a system experiences an outage and customers are unable to restore the system and recover data and applications from the stalled machine.
- **Application support challenges.** Application ISVs dislike having a complex support matrix and typically support current versions along with a finite number of earlier editions of the product. For most ISVs, an 11-year-old application is probably already past its rational support life cycle, and in most cases, these application ISVs are about to discontinue or have already discontinued support for aging operating system environments such as Windows Server 2003.
- **Compliance issues.** Customers in regulated industries or handling regulated data, including healthcare and payment card industry (PCI) data, may find that they are out of compliance, which could mean fines or being cut off from key trading partners that seek to protect their own regulatory compliance status.
- **Inability to leverage modern cloud options from Microsoft and other vendors.** Windows Server 2003 can run on virtually every hypervisor in the market, but that does not mean it is an equal player in these modern deployment scenarios. For example, Windows Server 2003 installations cannot be re-hosted in a Microsoft Azure environment, unless it is a 64-bit image, but the vast majority of Windows Server 2003 installations are 32-bit solutions. So even if customers bring the 32-bit image to the Azure cloud, they cannot continue using that operating system instance. When spinning up new infrastructure-as-a-service (IaaS) instances in Azure, Microsoft provides catalog images only for 64-bit instances of Windows Server 2012 R2. Customers looking to develop a hybrid cloud strategy will find that Windows Server 2003 will not offer the same level of convenience that Windows Server 2012, along with modern companion technologies such as System Center 2012 R2, brings to the table.

IDC research on operating systems indicates that Windows Server 2003 installations make up a minority of the overall Windows installed base – that is good news. But the bad news is that these remaining systems tend to be spread across the industry broadly, meaning a significant portion of Microsoft's customer base has a small number of Windows Server 2003 installations that remain in place, often because of application dependencies or lack of expertise to migrate the environments forward.

## Windows Server Since 2003

Windows Server 2003 followed the Windows Server 2000 product, which was a revolutionary change from the prior Windows NT versions of the product, ushering in the era of Active Directory (AD), and demonstrated Microsoft's interest in being a true enterprise player. Windows Server 2003 also was delivered after one of the more defining moments of Microsoft's corporate evolution – the security stand-down that took place in late 2001 and after the Trustworthy Computing initiative was launched by Bill Gates. Taking a look back, we note that this fundamental change to Microsoft's development processes ensured that Windows Server 2003, and subsequent Windows Server products, would be better than any product Microsoft had made before. The longevity of Windows Server 2003 and Windows Server 2003 R2 is a testament to the success of that renewed focus on product quality.

From April 2003, when the initial release of Windows Server 2003 was unleashed, through 2014, there have been two major updates of Windows Server and three minor updates to the product. The product family has historically been on a nominal 2 + 2 year cadence – that is, a release every second year, with the four-year release date being a major update. Windows Server 2003 was released in April 2003, and Windows Server 2003 R2 was released in December 2005. Barely two years later, in February 2008, Windows Server 2008 was released. That product was followed by Windows Server 2008 R2, which was released in July 2009. The most recent major release was Windows Server 2012, which was delivered in August 2012. The most current version of this product, Windows Server 2012 R2, came quickly thereafter and was released in October 2013.

During the past 11 years, Microsoft has accelerated its focus on the surrounding ecosystem and has evolved the Windows Server product portfolio significantly.

## Windows Server 2008 and Windows Server 2008 R2

The Windows Server 2008 product built on Windows Server 2003 R2 technology and began a dramatic scale-up trajectory, made possible in part by major innovations coming from Intel processors and the x86 architecture.

A few key examples of the improvements added in Windows Server 2008 and Windows Server 2008 R2 are as follows:

- **Hyper-V.** Microsoft's hypervisor technology was first delivered to Windows Server 2008 as an update to the beta version that was included in the release version of Windows Server 2008. The product received continued (and significant) investment and was updated and released again with Windows Server 2008 R2. For most customers, this was the first version that was worthy of a serious evaluation.
- **Improved system scale.** Windows Server 2008 R2 boosted the system's resources to support 2TB of memory, clustering support for up to 16 nodes and 1,000 VMs, and other similar metrics. In comparison, Windows Server 2003 R2 supported 1TB of memory.

- **DirectAccess.** A new capability introduced with Windows Server 2008 R2, DirectAccess combines three networking services, including DirectAccess, routing, and remote access, to permit better and more secure remote access by end-user computing devices such as Windows 7 or Windows 8 PCs.
- **Read-only domain controller.** This feature provided a way to protect Active Directory and domain configuration parameters from potential alteration or disruption.
- **Server Core installations.** Using Server Core deployments allows customers to create and install limited-function roles, including AD lightweight directory services, DNS services, DHCP services, file services, and similarly purpose-specific deployments.
- **Improved Remote Desktop Services.** The Remote Desktop Services (RDS) capabilities in Windows Server 2012, which were called Terminal Services in previous versions of Windows Server, enjoyed a substantial re-investment as part of Microsoft's overall support for end-user computing.
- **Remote infrastructure.** Windows Server 2008 and Windows Server 2008 R2 offered vastly improved branch office support, including incremental replication features that dramatically reduce bandwidth consumption between the corporate datacenter and remote or branch offices, which often have limited bandwidth.
- **Server management.** Microsoft improved server management through the use of the Server Core roles and continued to make improvements to PowerShell scripting (which was fully integrated into Windows Server 2008). The company also began to ramp investments in associated technologies as part of the growing System Center product family.
- **Web platform.** Microsoft made a substantial investment in Internet Information Server (IIS), releasing version 7.0 with Windows Server 2008.
- **Other improvements.** Windows Server 2008 and Windows Server 2008 R2 offered numerous enhancements such as IPv6 functionality and security improvements. Windows Server 2008 had the distinction of being the first Microsoft server operating system to have been developed in its entirety under the watch of Microsoft's Trustworthy Computing initiative

## *Windows Server 2012 and Windows Server 2012 R2*

Windows Server 2012 was the product with which Microsoft really got serious about supporting cloud-based deployments of Windows Server. Windows Server 2012 brought forward a truly mature hypervisor product to Microsoft customers, after several previous iterations that were substandard compared with those of key competitors in the market.

A few samples of the improvements added in Windows Server 2012 and Windows Server 2012 R2 are as follows:

- **Manageability through PowerShell.** Microsoft invested heavily to improve the manageability of Windows Server 2012 but, in parallel, reduced the complexity in scenarios that require availability or reliability. The underlying theme for manageability improvements was to start with PowerShell enhancements, followed by a fundamental shift to use PowerShell as the default management tool. GUIs in Windows Server 2012 are heavily augmented by (and occasionally replaced by) PowerShell interfaces. PowerShell 3.0 expanded its support for cmdlets to over 2,300 different cmdlets.

- **Ease of access.** Microsoft invested in server-side technologies to enable anytime, anywhere access and continues to invest in branch office and public connectivity capabilities. The company improved performance and usability of both VDI and remote desktop services, and it extended USB redirection capabilities, one area where Microsoft had been lagging.
- **Hyper-V improvements.** Windows Server 2012 included a vast array of improvements that brought the product generally on par with the competitive VMware ESX product. With the launch of Windows Server 2012 R2, Microsoft again boosted the technical limitations and capabilities of Hyper-V and erased any doubt that the company could compete with the VMware ESX hypervisor on a feature-comparison basis. Windows Server 2012 also, for the first time, permitted the use of a virtual machine as a domain controller and includes mechanisms to prevent a virtual domain controller to be rolled back to an earlier VM snapshot so as to protect the consistency of Active Directory.
- **Web server improvements.** Microsoft delivered improvements in the ability to support high-density Web domains and the ability to sandbox and CPU monitor and resource monitor individual Web sites in its Web server technology.
- **Virtualized datacenter capabilities.** Windows Server 2012 added the ability to perform shared-nothing live migration and network virtualization to its larger virtualization story. Hyper-V Extensible Switch makes it possible to connect virtual machines to a physical network, adding flexibility as to where virtual machines can be deployed. More recently, Microsoft improved Hyper-V Replica to allow it to leverage Microsoft Azure Site Recovery (IaaS) as a recovery environment.
- **SMB 3.0.** Microsoft updated the Server Message Block (SMB) protocol to version 3.0, which extends support to commodity hardware and storage devices.

## Layered Software

While there is a great deal of focus on Windows Server 2003 and the end of extended support, the reality is that most customers are not staying on Windows Server 2003 because they like using an out-of-date operating system. Instead, Windows Server 2003 is usually in use because of one or more dependencies another product places on the server operating system.

In many cases, it is an application software package that is subject to one of three challenges that makes it difficult or impossible to move off of Windows Server 2003:

- **Custom applications.** IDC finds that customers with custom applications, or heavily modified versions of standard applications, face a dilemma when it comes time to migrate those applications to a more modern operating system. The code often needs to be moved forward by the same developers who created the original application. The challenge is somewhat easier if the application was written entirely in-house, but only if the development team can still support this application and has the time to address the migration.
- **Packaged application software.** For many customers, the dilemma of packaged applications from an ISV is that they may not have a version that will install properly on a newer version of Windows Server. While it may in fact be compatible, the installer may do a version check and invalidate a newer version of Windows. This will require an application upgrade or a new purchase, along with a data migration to the newer application version.

- **Out-of-support application software.** In many cases, customers are running a product that is no longer supported or for which support will expire in the near term. This situation is similar to the packaged application software scenario depicted previously, where customers are faced with few options other than purchasing new versions of the products they are using. This very scenario is problematic for many Microsoft customers that are using SQL Server 2005 because the database product is nearing the end of its extended support life cycle (which expires on April 12, 2016). So it is of limited value to migrate SQL Server to Windows Server 2008 or Windows Server 2012, only to face a secondary migration about one year later.

The message here is simple: Think not just about an operating system migration/update but also about the entire software ecosystem that remains on Windows Server 2003 today, and make good decisions that benefit the whole application stack and offer the longest return on investment.

## FUTURE OUTLOOK

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The cloud- and 3rd Platform-influenced trajectory that the industry is on today is radically different from the trajectory the industry was on in the early to latter 2000s, when the majority of Windows Server 2003 servers were placed into service. Today, pressures are changing IT as we know it, including the following:

- **Standardization.** Most organizations have been on a mission to reduce the complexity and the diversity of their infrastructure. Part of that effort has been to eliminate the majority of non-x86 server platforms and consolidate all their x86 servers on either Linux or Windows as the two primary operating systems in use. Leading customers 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 – all part of preparing for a standardized infrastructure that can be replicated (and managed inexpensively) in public cloud at some point in the future.
- **BYOD and mobility.** Whereas in the early part of the 2000s Active Directory could authenticate and apply group policy to PCs, today the explosion of phones and tablets making their way into enterprises is putting heavy pressure on IT departments to support or enable access from these devices. IT departments, while well intentioned in trying to protect corporate assets, are overwhelmed and undergunned when pressured by the majority of their end customers to allow their mobile devices to be used in a corporate setting. Fortunately, most organizations have moved their domain controllers off of Windows Server 2003 onto a more current version of Windows, which does help mitigate this issue.
- **Hybrid and public cloud deployments.** Not every organization is ready to make a fundamental move to a cloud-based deployment for its most important assets, but there is a valid argument that says organizations should be leveraging cloud where it makes sense. For example, an organization can extend into a mobile device-friendly scenario, using something such as Microsoft's new Active Directory Premium solution as an identity and access management solution for mobile device users. Microsoft Azure AD Premium can be federated with a corporate Active Directory domain, allowing single sign-on and replication from the corporate domain to Azure AD. This technology in turn can take advantage of Microsoft Windows Intune to manage mobile devices.
- **Leverage public cloud.** It is becoming possible to leverage public cloud as an extension of corporate networks, without making a full-time, permanent commitment to a cloud environment. For example, Microsoft recently added new capabilities to Microsoft Azure Site Recovery to enable the replication and recovery of virtual machines from on-premises into Microsoft Azure, harnessing

the Hyper-V Replica capabilities within Windows Server 2012 and 2012 R2. This service previously ran its orchestration layer in the Microsoft Azure cloud, but the failover/recovery had to take place in a customer's redundant datacenter. That scenario remains viable, but for organizations that do not have a redundant datacenter, the recover-in-cloud option offers a realistic alternative.

## Developing a Response to Windows Server 2003 Modernization

IDC recommends that customers develop a strategy for mitigating and modernizing existing Windows Server 2003 and related application installations as soon as possible, given that the end of extended support is imminent. We suggest that customers, at a minimum, perform the following actions:

- **Establish a destination.**
  - Determine what your ideal and attainable end state is.
  - Understand your goals both for Windows and for your directory.
- **Conduct an inventory.**
  - Develop a good understanding of your current Windows Server 2003 environment.
  - What workloads are being supported by Windows Server 2003?
  - No-cost or low-cost inventorying tools are available from Microsoft (Microsoft Assessment and Planning [MAP] Toolkit), Dell (OpenManage Server Administrator [OMSA] and ChangeBASE), HP (HP Asset Manager software), and others to help map your datacenter workloads.
  - Microsoft MVPs (most valuable professionals) are available to help customers with this inventorying activity.
- **Triage your inventory list.**
  - Parse applications, workloads, and services into buckets.
    - Those workloads that are replaceable on-premise with an OS service or off-premise with a service should be displaced using standardized service offerings.
    - Apps that can migrate with minimal work
    - Apps that can migrate with moderate investment
    - Apps requiring substantial work or total re-architecting
    - Apps that can be retired
- **Consider all destination options.**
  - Use "virtualize first" strategy for internal apps.
  - Use virtualization as a transitional tool.
  - Deploy Windows Server 2012 R2 VMs, and downgrade to Windows Server 2003 as an interim step.
  - Realistically consider applications that can move to the cloud (i.e., Exchange to Office 365).
  - Seriously consider moving Web-facing and customer-facing apps with low security concerns to Web platform as a service (PaaS) or IaaS. IDC notes that Microsoft has a set of partners under the Cloud OS Network initiative the company launched in 2013. This expands the customer options for Windows IaaS deployments.



- **Determine the risk.**
  - Cross-map inventory list with risk/criticality of each application.
  - Mitigate the risk: Start with P2V migration, and keep that snapshot running to ensure availability should the migration hit speed bumps.
- **Clean house before moving.**
  - As home movers say, it costs as much to move junk as good stuff.
  - Clean up your directory. Think specifically of directory concerns for extending into Azure AD in the future for mobile devices.

IDC notes that some IT departments don't have the budget or resources to apply to a migration. We strongly encourage organizations to create that executive support. It could be just a matter of encouraging the CIO to ask the president, CEO, or chairman a simple question: Do you want to go before the board or shareholders and explain that the company is placing its IP at risk because it is unwilling to invest in maintaining its IT running on current software solutions?

## CHALLENGES/OPPORTUNITIES

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For any vendor, a transition seems to automatically become a potential point of entry for competitors and is broadly promoted as such, regardless of whether it is a viable point of entry or not. In the case of Windows Server 2003, IDC believes that the difficulty of migrating from Windows Server 2003 to a more current version of Windows pales in comparison to the challenge of a more complex migration scenario. Challenges and opportunities that IDC sees include the following:

- **Competitive pressures.** Expect to see marketing spin from Linux vendors, VMware, and others that want to use this event as an opportunity to engage with Microsoft customers. We see the potential to migrate aging Windows Server 2003 installations to a competitive product such as Linux or Unix to be a non-starter for most customers. IDC believes this is largely a Windows-to-Windows transition.
- **Opportunity to leverage hybrid and public clouds.** There is little doubt that for some customers, this transition is a viable opportunity to begin using either hybrid or public cloud to develop next-generation computer solutions. In some cases, this means a migration from a Windows Server 2003 to a software-as-a-service (SaaS) offering or to use an IaaS solution to host Windows Server 2003 as part of an interim solution. Customers have many options today – and will likely have more in the future – for service provider partners and Microsoft's Cloud OS Network partners hosting Windows Server 2003 IaaS instances. However, be forewarned that moving Windows Server 2003 to an IaaS solution is not necessarily helpful in terms of mitigating the original challenge associated with using an operating system that is approaching the end of its life cycle.
- **Benefits of modernization.** There are clear benefits for IT staff associated with moving forward to a newer Windows version. Features such as the ability to use IPv6, modern virtualization software with Hyper-V, comprehensive management with System Center 2012 R2, and improved product SKU options help make it easier to deploy and manage Windows Server. In addition, System Center Configuration Manager and System Center Virtual Machine Manager also make for an easier-to-administer, easier-to-support environment for IT staff. In addition, customers can take

advantage of modern Windows licensing terms, including gaining access to datacenter SKUs, which give customers per-socket licensing terms/costs in exchange for unlimited virtualization rights, a trade-off that many customers seem to prefer today.

- **Mobile first, cloud first.** Microsoft has a clear mandate, driven by new CEO Satya Nadella, to focus on driving a mobile-first, cloud-first strategy to computing. Even for organizations that have no interest in developing cloud solutions, the ability to integrate and manage mobile devices through Azure AD and Windows Intune, working in conjunction with Windows Server 2012 Active Directory, is a benefit that will pay back to the IT staff.

## CONCLUSION

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While many customers may feel like they are being sent on a forced march to update Windows Server 2003, the reality is that Microsoft's support policies for its software products are relatively generous, and the company has released two successive products over the past six years. The Windows Server 2003 product is now in its 11th year of use and has long been a reliable part of many organizations' infrastructure – which is the very reason why it is still in use.

Successive Windows products make clear improvements over Windows Server 2003, though IDC recognizes that it requires effort and investment on the part of customers to move aging applications forward to newer Windows versions. We believe that there are many attractive reasons to voluntarily move forward; the reality is that the threats and risks associated with going beyond the termination of extended support will be the real motivating factors for many customers.

We think customers should take advantage of this migration and see it as an opportunity to not only move forward to a newer version of Windows but also modernize and prepare for the next generation of computer where hybrid and public clouds are important components of next-generation IT.

## About IDC

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## Global Headquarters

5 Speen Street  
Framingham, MA 01701  
USA  
508.872.8200  
Twitter: @IDC  
[idc-insights-community.com](http://idc-insights-community.com)  
[www.idc.com](http://www.idc.com)

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