

Top-10 Reasons to Move to Microsoft Windows Server 2012 R2 and Cisco UCS from Microsoft Windows Server 2003

What You Will Learn

As Microsoft Windows Server 2003 nears its end-of-support date in July 2015, businesses still running the aging OS are facing a number of vital considerations. The computing landscape has changed drastically since the release of Windows Server 2003 more than a decade ago. Although the Windows Server 2003 platform worked well in its time, after Microsoft support expires, it will become both a liability and a limitation for organizations still running it. In this document, you'll learn some of the important reasons why your company needs to migrate important workloads and services away from Windows Server 2003. You'll learn about some of the biggest concerns about Windows Server 2003's end of life, as well as some essential considerations to keep in mind while planning your migration.

Foremost, you'll learn the top-10 reasons why the Cisco Unified Computing System™ (Cisco UCS®) is the most effective platform for your Windows Server 2003 migration. You'll understand how Cisco UCS can vastly improve the performance of your Windows Server 2003 applications while simultaneously providing improved availability and reliability for your business-critical workloads.

Impact of Microsoft Windows Server 2003 End of Life

It's important to understand exactly what the end of Microsoft's support for Windows Server 2003 means for your organization. First, not only will Microsoft no longer provide product support, it will also stop issuing new updates and bug fixes. More important, Microsoft also won't be issuing any new security patches. Therefore, Windows Server 2003 will become both a potential maintenance problem and a security vulnerability.

To put the situation in perspective, Microsoft has been actively patching Windows Server 2003 for years: for instance, in 2013, Microsoft released 37 critical updates for Windows Server 2003 and Windows Server 2003 R2. Without updates, the burden on IT and the costs of maintaining Windows Server 2003 installations will increase. With no security patches, Windows Server 2003 systems may become vulnerable to security threats. This problem could potentially be exploited by hackers and malware producers who know that millions of these Windows Server 2003 systems will still be in production.

The lack of security patches can also create a problem with regulatory-compliance requirements. For example, Health Insurance Portability and Accountability Act (HIPAA) Security Rule Section 164.308(a)(5)(ii)(B) states that you must implement "procedures for guarding against, detecting, and reporting malicious software." If Microsoft is no longer producing security updates for Windows Server 2003 to protect systems against malicious software, businesses will be unable to comply with this HIPAA regulation. For many organizations, lack of compliance with regulations such as HIPAA and Payment Card Industry Data Security Standard (PCI DSS) will subject them to penalties.

Certainly these are serious concerns for most organizations. However, organizations that continue to use Windows Server 2003 will also fall behind today's IT advances and make poor use of IT infrastructure resources. Windows Server 2003 cannot take advantage of many of today's advances in virtualization, networking, and storage technologies. The result is an outdated and inflexible IT infrastructure that fails to meet modern business application requirements. Although you may save some expenses by continuing to use existing technologies, you can't ignore the cost of not taking advantage of current technologies. If you don't migrate, management will become increasingly time consuming and costly, and you will lose opportunities for advancement.

Migration Considerations

In the case of Windows Server 2003, migration usually won't require simply installing a newer OS. Windows Server 2003 is more than a decade old. In 2003, servers were predominantly 32-bit. In addition, most Windows Server 2003 installations occurred prior to virtualization, which means that a lot of them still run on physical servers. Technology has advanced dramatically over the past 11 years. As you move your workloads off Windows Server 2003, you'll want to take best advantage of today's advanced IT Infrastructure improvements.

The first step in the migration process is to discover and catalog all the software and applications running on your Windows Server 2003 systems. One of the most important tools to help you with the discovery process is the Microsoft Assessment and Planning (MAP) Toolkit. MAP is a free agentless inventory, assessment, and reporting tool that helps assess and discover IT assets and resources. You can download MAP from the [Microsoft Download Center](#).

After identifying the applications and services running on the Windows Server 2003 systems, the next step is to analyze your applications and workloads based on their type, their importance to the business, the complexity of the migration effort, and their risk. After completing the assessment phase, you can prioritize workloads and applications for migration and select a target platform for your migration. For the vast majority of organizations, the migration target will be an instance of Microsoft Windows Server 2012 or Windows Server 2012 R2 running in a virtual machine. For optimal performance and reliability, you need to select a virtualization platform such as Cisco UCS that can provide the processing power, network bandwidth, and manageability that your organization requires.

Advantages of Cisco UCS for Microsoft Windows Server 2003 Migrations

Here are the top-10 reasons why Cisco UCS is the optimal platform for your migration from Windows Server 2003.

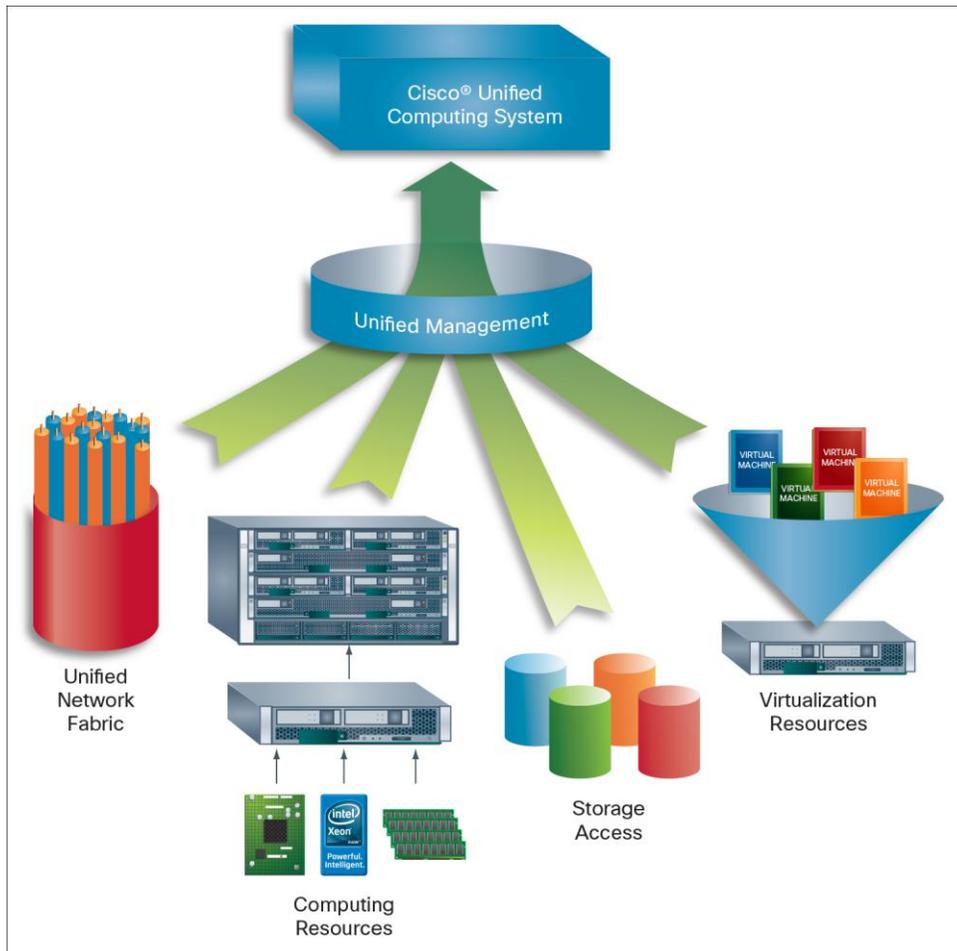
1. Infrastructure Modernization

Computing power and IT technology have changed dramatically since Windows Server 2003's release. Ten years ago, there were no multicore processors, and virtualization was in its infancy. AMD released the very first x64 Opteron processors in 2003, so most Windows Server implementations were still 32-bit. The first bare-metal hypervisor, from VMware, had debuted in 2002, so the vast majority of Windows Server 2003 installments were physical implementations. Although some of these have since been converted to virtual machines, a large number of aging physical systems are still in use.

Cisco UCS provides a modern, advanced IT infrastructure by uniting computing, networking, storage, and virtualization resources into a cohesive system that can be managed with Cisco® unified management tools. The system is a multichassis platform that uses a high-performance, flexible 10 Gigabit Ethernet unified network fabric to connect enterprise-class Intel Xeon servers and storage in a platform that is virtualized at all layers. Plus, Cisco has partnerships with both VMware and Microsoft for full support of today's industry-leading virtualization technologies: Cisco UCS supports both the VMware vSphere and Microsoft Hyper-V virtualization platforms.

Figure 1 shows how Cisco UCS can modernize your IT infrastructure.

Figure 1. Cisco UCS Advanced Integrated Architecture



2. Record-Setting Performance and Scalability

Cisco UCS scalability and expandability make it an excellent platform for running virtualized Windows Server 2003 migrations. The latest generation of Cisco UCS uses either two or four [Intel Xeon processor E7-4800 v2](#) or [E7-8800 v2](#) CPUs, providing up to 60 cores in a virtualization host. This configuration enables your computing infrastructure to handle the processing requirements of multiple production virtual machines with high computing requirements.

The capability to support large amounts of RAM is also a critical feature in a virtualized server-consolidation environment because the amount of physical RAM is the overall limiting factor that determines the number of virtual machines that can run concurrently. Both Microsoft Hyper-V and VMware vSphere support virtual machines with up to 1 terabyte (TB) of RAM per virtual machine. The Cisco UCS B460 M4 Blade Server supports up to 96 DIMM slots, for a total of up to 3 TB of RAM per host. Beyond this, the Cisco UCS C460 M4 Rack Server can provide up to 6 TB of RAM using up to 96 × 64-GB DIMMs. The large memory capacities of Cisco UCS servers enable you to sustain a high degree of server consolidation by running multiple highly scalable virtual machines simultaneously.

The platform's raw computing power is also extremely important for supporting a variety of business-critical applications. The virtualization and computing performance of Cisco UCS is aptly demonstrated by six recent world-record benchmark results:

- [VMware® VMmark® 2.5.1](#) Benchmark (Virtualization and Cloud Performance): Number-one 2-socket, 2-node result
- [SPECint® rate_base2006](#) Benchmark (general CPU performance): Number-one 2-socket server result
- [SPECfp® rate_base2006](#) Benchmark (general CPU performance): Number-one 2-socket server result
- [SPECComp® G_base2012](#) Benchmark (parallel computing performance): Number-one 2-socket server result
- [SPECint® rate_base2006](#) Benchmark (general CPU performance): Number-one 4-socket server result
- [SPECComp® G_base2012](#) Benchmark (parallel computing performance): Number-one 4-socket server result

3. Fast, Flexible Deployment through Stateless Architecture

Cisco UCS servers are different from other server platforms in that they aren't statically configured. Cisco UCS uses a unique stateless architecture that lets you quickly provision and reprovision servers based on service profiles. On traditional servers, hardware attributes such as MAC addresses, network interface cards (NICs), and the host bus adapter (HBA) worldwide port name (WWPN) are statically fixed before you can configure them. With Cisco UCS servers, nothing has a preset static configuration. A Cisco UCS server or blade doesn't have its system configuration until a service profile is associated with it.

Service profiles are software constructs that enable you to abstract a physical server's attributes and apply them to any Cisco UCS server, effectively reconfiguring the Cisco UCS server dynamically. Service profiles are created by the administrator, and all the server's configuration details are defined in the service profile. Service profiles can be dynamically applied to any Cisco UCS server in minutes.

Cisco UCS service profiles consist of the following:

- **Server definition:** This definition identifies the resources (for example, a specific server or blade inserted into a specific chassis) to which the service profile will be applied.
- **Identity information:** This information about the server includes the universally unique identifier (UUID), the MAC address for each virtual NIC (vNIC), and the HBA worldwide name (WWN).
- **Firmware revision specifications:** These specifications define when a specific firmware revision is required.
- **Connectivity definition:** This definition specifies the network adapters, fabric extenders, and parent interconnects.

4. More Efficient Networking through Cisco Unified Fabric and SingleConnect Technology

The unique Cisco Unified Fabric and SingleConnect technologies provide significant networking advantages over traditional server network architectures. A traditional host server acting as a virtualization host typically has many networking and storage interfaces. There are usually multiple Ethernet connections with separate NICs and cabling for client connectivity, host management, virtual machine migration, and Small Computer System Interface over IP (iSCSI) storage. In addition, the server often has Fibre Channel HBAs for SAN connectivity. This scenario can be complicated and expensive to maintain because of all the NICs, HBAs, cabling, and switches that are required to support the multiple connections.

Cisco UCS takes a more advanced approach to networking with Cisco Unified Fabric and SingleConnect, which vastly simplify network connections and can be configured in a variety of ways. SingleConnect is an end-to-end networking architecture that uses VICs, Cisco UCS fabric interconnects, and Cisco Fabric Extender Technology (FEX Technology) to connect all your Cisco UCS servers on a single network fabric and on a single network layer. You don't need to physically separate storage traffic from client and virtualization networking. SingleConnect technology combines three network layers into one: top of rack, blade chassis, and server hypervisor switching - unifying LAN, SAN, and server systems management networks on a single fabric. The Cisco Unified Fabric enables you to wire once for bandwidth; you don't need to support a collection of separate NICs. Policies assigned by the administrator control both the configuration and the bandwidth allocation. This approach vastly simplifies infrastructure cabling and enables you to use policies to configure the connections you require. Figure 2 shows an example of how Cisco Unified Fabric and SingleConnect are far simpler and more efficient than traditional network connections.

Figure 2. Comparing Traditional Networking with Cisco UCS with Unified Fabric and SingleConnect

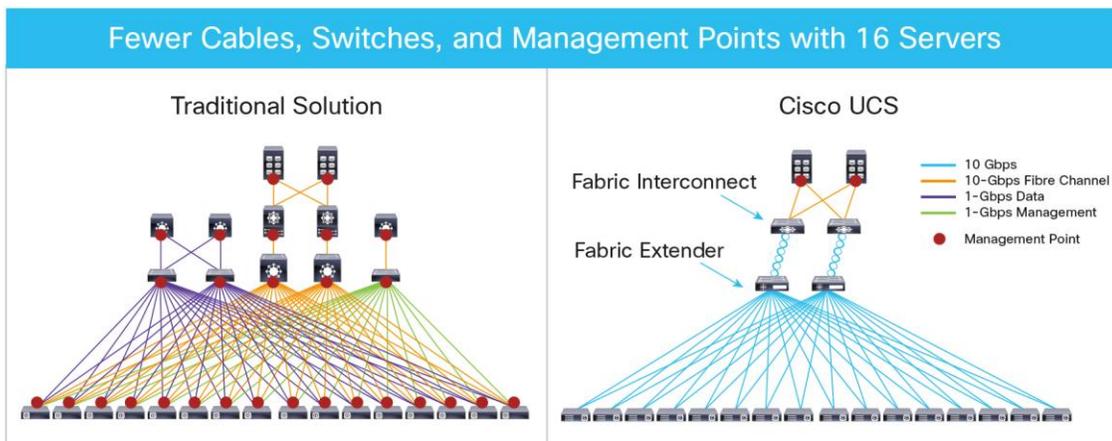
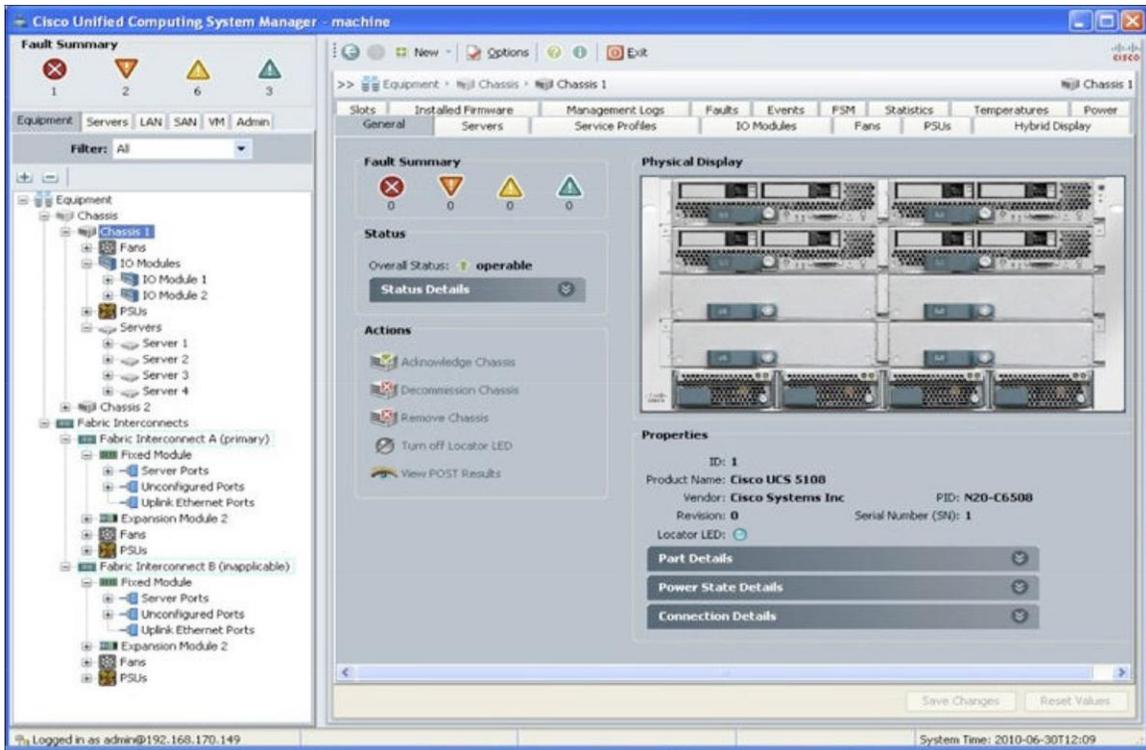


Figure 2 shows that a traditional networking solution for 16 servers is far more complicated and requires many more NICs and switches than the Cisco UCS solution. Less network equipment results in less cost, easier ongoing maintenance, and more flexible bandwidth allocation.

5. Extended Manageability with Cisco UCS Manager

Businesses today are faced with the task of managing more servers and applications than ever before. At the same time, almost all organizations are seeking to do more with less and improve their operating efficiency and reduce their costs. Cisco UCS Manager (Figure 3) enables businesses to reduce management efforts and administration expenses by providing unified embedded management for all the software and hardware components of Cisco UCS. Cisco UCS Manager is the central management tool for the Cisco UCS infrastructure - embedded device-management software that controls, monitors, and configures all components of Cisco UCS and manages them as a single, logical domain. Cisco UCS Manager can manage up to 160 servers and thousands of Cisco UCS components in multiple chassis.

Figure 3. Cisco UCS Manager



6. Enhanced Availability and Service-Level Agreements

Availability is critical to the vast majority of today's IT infrastructure servers, and the unique stateless architecture and flexible networking capabilities of Cisco UCS provide several technologies that can enhance the availability of the business-critical workloads that you migrate from Windows Server 2003. First, Cisco UCS stateless architecture and service profiles help protect against server hardware failure by letting you quickly and easily move the entire personality and configuration of a given server to a different physical server. This capability increases overall system availability. It also dramatically reduces the time required to replace an individual server that has failed, regardless of whether it is a physical system or a virtualization host.

In addition, the Cisco UCS high-bandwidth, low-latency unified fabric network provides an excellent platform for virtualization and the use of technologies such as VMware vMotion and Microsoft live migration to move virtual machines among different virtualization hosts. Both vMotion and live migration enable you to reduce planned downtime by moving workloads from virtualization hosts to perform routine maintenance or patching.

In addition, when used with other virtualization technologies such as VMware Distributed Resource Scheduler (DRS) and Dynamic Optimization, the unified fabric improves your capability to meet your service-level agreements (SLAs) by dynamically moving virtual machines among virtualization hosts to better match your workload requirements. The Cisco UCS unified fabric is highly configurable and supports dynamic quality of service (QoS), helping ensure that the connection between the various virtualization hosts has the network bandwidth required to reduce the time needed to perform vMotion or live migrations.

7. Deep Integration with Microsoft PowerShell

Microsoft PowerShell has become increasingly important to IT administrators. First released in 2006, PowerShell is both a command shell and a powerful scripting language that you can use to automate your IT operations. Cisco UCS is fully integrated with PowerShell, and the Cisco UCS PowerTool PowerShell library provides more than 1850 PowerShell cmdlets that have full visibility into the Cisco UCS Manager XML API. Anything you can do with the XML API, you can do through Cisco UCS PowerTool. Common tasks that you can accomplish with Cisco UCS PowerTool include the following:

- Collect server inventory
- Collect environmental statistics
- Collect hardware faults
- Collect power and cooling statistics
- Perform network configuration
- Manage service profiles and templates
- Launch the Cisco UCS keyboard, video, and mouse (KVM) console
- Synchronize managed objects

Cisco worked closely with Microsoft in designing the Cisco UCS PowerTool library, making it familiar and natural to use for Microsoft administrators who understand PowerShell. Administrators can quickly learn the Cisco UCS PowerTool cmdlets by logging into the Cisco UCS Manager GUI and running **ConvertTo_UcsCmdlet**. As you perform tasks in the GUI, the cmdlet automatically generates the equivalent Cisco UCS PowerTool commands.

8. Optimal Management with Microsoft System Center

Cisco UCS offers deep integration with the Microsoft System Center Management Suite. A Cisco UCS Management Pack for Microsoft System Center Operations Manager enables deep monitoring of the Cisco UCS hardware as well as of your applications and OSs. The management pack is easy to configure, and you don't need to manually configure all the Cisco UCS servers in your domain. Instead, you simply connect the management pack to Cisco UCS Manager, and it automatically discovers all the servers in your entire Cisco UCS domain (and their properties).

Microsoft System Center Orchestrator automates operations in the data center. For this component of System Center, Cisco provides Cisco UCS Integration Pack for Microsoft System Center Orchestrator, which exposes multiple Cisco UCS management activities. The Orchestrator integration pack takes full advantage of the graphical Orchestrator Runbook Designer, enabling you to drag and drop Cisco UCS management tasks onto Orchestrator workflows so that you can standardize and automate common management tasks such as backing up Cisco UCS, creating VLANs, and creating service profiles from templates. You can also use the Cisco UCS PowerShell library in Orchestrator workflows.

Cisco provides a user interface extension for Microsoft System Center Virtual Machine Manager (SCVMM) that enables you to manage your private cloud's physical and virtual infrastructure from a single console. Cisco's user interface extension for SCVMM allows you to register a Cisco UCS domain in SCVMM, giving you deep management information for your Cisco UCS hosts. The SCVMM user interface add-in lets you manage your Cisco UCS server's power status, view host errors, apply a service profile to a hypervisor, and manage firmware on your Hyper-V hosts.

You can learn more about Cisco UCS and Microsoft System Center Operations Manager and Orchestrator integration in the Cisco white paper [Optimally Manage the Data Center Using Systems Management Tools from Cisco and Microsoft](#). You can learn more about SCVMM integration in the white paper [Cisco UCS Add-In for Microsoft System Center Virtual Machine Manager](#).

9. Better Return on Investment and Lower Total Cost of Ownership

Moving your Windows Server 2003 installation to Cisco UCS will provide your business with a better return on investment (ROI), and it will reduce your total cost of ownership (TCO). The Cisco UCS platform is extremely powerful and scalable, enabling you to have higher server-consolidation ratios as you migrate your older Windows Server 2003 installations to virtual machines running on Cisco UCS. This feature results in both reduced hardware costs and reduced software-license costs.

In addition, Cisco Unified Data Center fabric vastly simplifies your data center networking requirements. You'll benefit from a reduction in direct costs for items such as NICs, switches, and cabling. There are also indirect savings. For instance, you may not need to buy a larger server to accommodate all the NICs that a traditional server requires. And there are also infrastructure savings. Reducing your network infrastructure and networking footprint results in reduced power and cooling requirements. Reduced complexity also simplifies management and enables improved business-continuity and disaster-recovery strategies.

To get a better idea of the type of ROI and TCO you can get from Cisco UCS, review some of the tools that Cisco offers. The following links will help you quantify the ROI and resulting business value of Cisco UCS data center solutions:

- [Cisco UCS TCO-ROI Advisor](#): This tool shows you how you can reduce data center capital and operating expenses by deploying Cisco UCS.
- [Cisco Unified Fabric ROI Tool](#): This tool shows you the value of using the Cisco Unified Fabric by comparing the Cisco Nexus[®] 5000 Series Switches with traditional data center networking technologies.
- [Cisco UCS Power Calculator](#): This tool lets you calculate the power requirements of all Cisco UCS blade and rack servers.

10. Strong Cisco and Microsoft Partnership

Another reason to choose Cisco UCS for your target migration platform is to take advantage of the close partnership between Cisco and Microsoft. Microsoft has been a Cisco partner since the release of the Cisco UCS line of servers more than four years ago. Cisco and Microsoft have a joint R&D investment. Cisco also participates in the Microsoft Fast Track partner program and is part of the Microsoft Private Cloud Fast Track 4.0 and SQL Server Fast Track programs.

These Fast Track programs essentially combine the expertise of the Cisco UCS engineering team with Microsoft expertise to create a field-proven reference architecture for you to follow to build your own efficient, high-performance IT infrastructure. Fast Track programs remove the trial-and-error guesswork that you would typically have to use to optimally support your mission-critical workloads on a new platform.

You can find more information about the Private Cloud Fast Track program for Cisco at <http://www.cisco.com/go/flexpod> or <http://www.cisco.com/go/vspex>.

Positioning Your Infrastructure for the Future

Cisco UCS advanced architecture provides the optimal platform for your Windows Server 2003 migrations. Cisco UCS enables you to modernize your IT infrastructure by increasing performance, scalability, and availability while simultaneously reducing costs. The unique stateless architecture of Cisco UCS enables you to quickly deploy and redeploy servers. Its extreme processing power, high memory capabilities, and advanced networking capabilities make Cisco UCS an excellent platform for virtualization and server consolidation. Microsoft and Cisco's longstanding partnership and the deep integration of PowerShell and System Center with Cisco UCS help ensure tight integration for your hardware and software platforms.

For More Information

You can learn more about Cisco UCS servers and how they can help you migrate from Windows Server 2003 at <http://www.cisco.com/go/ucs2003> and [Servers - Unified Computing](#)



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