



Cisco UCS: Optimal Infrastructure for Microsoft SQL Server 2016 Workloads



With the proliferation of database and virtualization sprawl and the growing need for business insight that has increased I/O performance demands and complexity in the data center, enterprises are asking for a simplified approach. The Cisco Unified Computing System™ (Cisco UCS®) platform offers industry-leading performance along with the flexible infrastructure you need to deploy, manage, move to the cloud, and scale your bare-metal and virtual Microsoft SQL Server workloads.

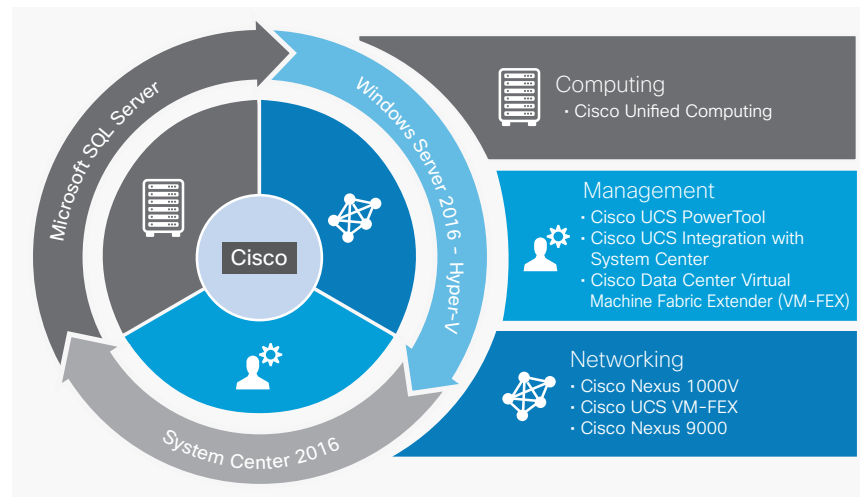
Cisco Unified Computing System Overview

Cisco UCS is an intelligent fabric-based computing infrastructure that simplifies operations and accelerates application deployment in physical and cloud computing environments. It is entirely programmable using unified, model-based management, enabling you to more easily and quickly deploy enterprise applications—bare metal, containerized, and virtual—such as SQL Server 2016. The unified I/O infrastructure uses a high-bandwidth, low-latency unified fabric to support networking, storage I/O, and management traffic (Figure 1).

Cisco UCS unified fabric increases performance, security, and manageability by extending the fabric directly to servers and virtual machines. Cisco UCS servers are 100 percent stateless, delivering a highly flexible server environment that allows dynamic use of server hardware.

Cisco and Microsoft have worked to create Cisco® Validated Designs built on Microsoft reference architectures. All solutions and reference architectures are field tested and validated to help simplify the implementation and deployment of SQL Server workloads on Cisco UCS.

Figure 1. Cisco UCS and Microsoft SQL Server



Simplify and Standardize Microsoft SQL Server Deployments

Reduce the complexity in your SQL Server deployments with Cisco UCS service profiles. Service profiles contain the metadata for the server. Because Cisco UCS servers are stateless, every Cisco UCS server that serves a workload must be associated with a service profile. When a service profile is applied to a blade, the server is turned on and the environment brought up and made available to end users in minutes.

Enforce Standardization in Your Organization

Configure service profile templates specifically for your SQL Servers and foster consistent standardization of your SQL Server implementations. After templates are created, service profiles can be created and associated with a server in seconds. Every time you deploy a SQL Server, you create the service profile from its template, and that server is deployed according to the standards set forth by your organization, with the same firmware versions and configurations.

Quickly and Easily Deploy Microsoft SQL Servers

Service profiles can provide considerable relief for SQL Server administrators when they need to bring failed servers back into production. Just disassociate the service profile from the downed server and associate it with another server, and the workload will be back up and running in minutes.

Servers can be deployed just as easily even over multiple Cisco UCS domains by using Cisco UCS Central Software and other network extensible technologies from Cisco. Additionally, you can easily customize your operations with automated Microsoft PowerShell scripts. With unified fabric with automatic failover capabilities and bandwidth of up to 320 Gbps, Cisco UCS is an excellent platform for mission-critical SQL Server 2016 deployments.

Proactively and Efficiently Monitor, Manage, and Maintain Your Microsoft SQL Server Implementations

Together, Cisco and Microsoft provide an integrated management experience for both bare-metal and virtual workloads. Cisco UCS Manager provides flexible, standards-based management tools and interfaces through a comprehensive, open XML API that works with and extends the Microsoft System Center 2016 suite of tools.

Free Cisco integration and management packs along with Microsoft tools enable you to easily:

- Proactively manage and monitor your Cisco UCS hardware with Microsoft System Center Operations Manager (SCOM)
- Automate, standardize, and extend Cisco UCS deployment and management with Microsoft System Center Orchestrator
- View and manage Cisco UCS infrastructure directly from Microsoft System Center Virtual Machine Manager (SCVMM) with the user interface extension add-in for SCVMM

Automate Your Data Center with Cisco UCS and Microsoft PowerShell Integration

PowerShell's use across Microsoft operating systems and applications makes Cisco UCS PowerTool extremely valuable.

Reduce your administrative and operational overhead while decreasing your automation time with PowerTool. It is an easy-to-use, extensive PowerShell library of purpose-built cmdlets to automate provisioning and configuration tasks for Cisco UCS and Cisco Nexus® 1000V and 9000 Series Switches.

Control Your Server Consolidation and Scale Your Virtual Deployments

Cisco UCS provides large amounts of computing and memory capacity per standard rack unit. With other blade systems, companies implementing large, virtualized SQL Server workloads often find that their systems do not have enough I/O capacity to service their workloads and so must add blades and ports to their environments.

The risk of running out of capacity is reduced considerably on Cisco UCS because of its use of converged adapters. Cisco UCS virtual interface cards (VICs) can expose up to 256 virtual network interface cards (vNICs) and virtual host bus adapters (vHBAs) to a host and can provide 20 to 80 Gbps of network throughput. VICs together with Cisco UCS technology help ensure predictable and consistent network and storage performance for virtualized SQL server deployments on Microsoft Windows 2016. Network and storage bandwidth is crucial for successful consolidation of SQL Server workloads, and these highly innovative adapter cards from Cisco make Cisco UCS a very attractive server platform for virtualized SQL Server workloads.

Support for Scale-Out and Scale-Up Virtual Deployments

Cisco UCS allows enterprises to take either a scale-up or scale-out approach. With the scale-up approach, there are multiple databases or SQL Server instances per virtual machine. Fewer virtual machines overall can potentially reduce SQL Server licensing costs and provide moderate workload management benefits.

The scale-out approach uses a single database per virtual machine. This approach thus uses more virtual machines, but it also provides better isolation, performance, load balancing, and workload management. In addition, users experience easier security and change-management processes and a potential decrease in management overhead.

With Cisco UCS architecture, you can easily upgrade to a 4-socket server as your SQL Server workload grows. You simply migrate the service profile to a newer blade. This capability reduces the complexity involved in setting up infrastructure when demand increases regardless of whether you are implementing scale-out or scale-up requirements.

Transition Your Microsoft SQL Server Platform to the Cloud

With the capabilities inherent in Cisco UCS and the new capabilities Microsoft has released in the Windows OS, including Windows Server 2016 and System Center 2016, you can now move your SQL Server platform to the cloud inexpensively and efficiently. Cisco and Microsoft have worked together with storage partners such as NetApp, Pure Storage, and IBM to create validated designs with proven reference architectures to provide availability and reliability in your data center.

Get Started Today

This is your opportunity to take advantage of an optimal unified computing and server infrastructure for your Microsoft applications. Cisco UCS gives you the flexible infrastructure you need to deploy, manage, and scale your bare-metal or virtual SQL Server workloads.

Why Cisco for Microsoft?

We recognize that the intersection of computing, networking, virtualization, and software is central to a new era of innovation. The Microsoft and Cisco alliance extends the value of the Cisco Unified Data Center, including low-latency unified fabric to support networking, storage I/O, and Cisco UCS and model-based management to simplify and accelerate deployment of enterprise applications, whether bare metal or virtual. Together, Microsoft and Cisco offer service and support to accelerate your time to value and ROI. Our partner ecosystem, including value-added resellers and global systems integrators, benefits Microsoft partners and Cisco partners and customers alike.

Learn More

For more information, contact your Cisco or Microsoft representative, or visit:

- <http://www.cisco.com/go/microsoft>