

Cisco UCS B200 M3 Blade Server: Scalable Performance and Capacity for SAP Business Suite Applications



Performance Brief
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Highlights

Best 2-Socket Linux Result

- As of the date of this brief, Cisco delivered the best 2-socket SAP Sales and Distribution (SD) Benchmark result in a Linux environment.

Support a Growing User Base

- Cisco Unified Computing System™ (Cisco UCS®) running Sybase ASE Server and configured with a LSI 400GB SLC WarpDrive delivers a scalable foundation for deployments of SAP Business Suite software.

Standardize on an Industry-Leading Solution

- Deploy Cisco UCS with Red Hat Enterprise Linux for additional flexibility, efficiency and lower cost. When used with with enterprise-class, open source operating system software, Cisco UCS servers make an excellent foundation for any standards-based infrastructure solution.

Scale to Meet Demand

- Results show that Cisco UCS B200 M3 Blade Servers can support up to 6530 concurrent users in a Red Hat Enterprise Linux and Sybase ASE Server environment.

Optimize Application Throughput

- High-performance blade servers and network fabrics enable Cisco UCS to handle many SAP application tasks, with results showing that the system can process 713,670 order line items per hour or 2,141,000 dialog steps per hour.

Simplify Data Center Infrastructure

- Cisco UCS dramatically reduces the number of physical components needed to support demanding SAP Business Suite application workloads, enabling IT departments to make effective use of limited space, power, and cooling resources.

Continuing its industry leadership, Cisco delivers impressive scalability and performance to growing deployments of SAP Business Suite applications.

Running business-critical SAP Business Suite applications efficiently requires computing infrastructure that can support a large and growing user community and deliver high throughput. Cisco's results on the SAP Sales and Distribution (SD) Benchmark—support for up to 6530 concurrent users and a 35,680 SAP Application Performance Standard (SAPS) score derived from the processing of 713,670 order line items per hour and 2,141,000 dialog steps per hour—demonstrate how a Cisco UCS® B200 M3 Blade Server configured with an LSI 400GB SLC WarpDrive delivers high scalability and low latency to SAP Business Suite solutions.

SAP Sales and Distribution Benchmark

The SAP SD Benchmark is designed to stress the solution architecture and determine whether consistent response can be delivered as more users consume system resources. Focused on testing components that influence the sizing of deployments, the benchmark exercises the processes that handle a sell-from-stock transaction, including business processes such as order creation and delivery, the movement of goods, and invoice creation. As a result, infrastructure platforms experience conditions similar to those found in two-tier SAP Business Suite application deployments.

Benchmark Configuration

The tested configuration consisted of a Cisco Unified Computing System™ (Cisco UCS) chassis equipped with one Cisco UCS B200 M3 Blade Server running Red Hat Enterprise Linux 6.3. The server was configured with two 2.90-GHz, 8-core Intel® Xeon® processor E5-2690 CPUs and 256 GB of 1600-MHz memory. The blade server ran both the SAP Business Suite application software and the 64-bit Sybase ASE Server 15.7 in a bare-metal configuration. The SAP Enhancement Package 5 for SAP Enterprise Resource Planning 6.0 was used in this scenario. One LSI 400GB SLC WarpDrive, a mezzanine card deployed within the blade server, provided solid-state disk capacity for database log files that require low-latency write access.

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The Cisco UCS B200 M3 server was connected to a pair of Cisco UCS 6120XP 20-Port Fabric Interconnects. Two high-performance Cisco Nexus 5548 Switches provided access to data stored on a NetApp FAS3170 storage system. Figure 1 depicts the benchmark configuration.

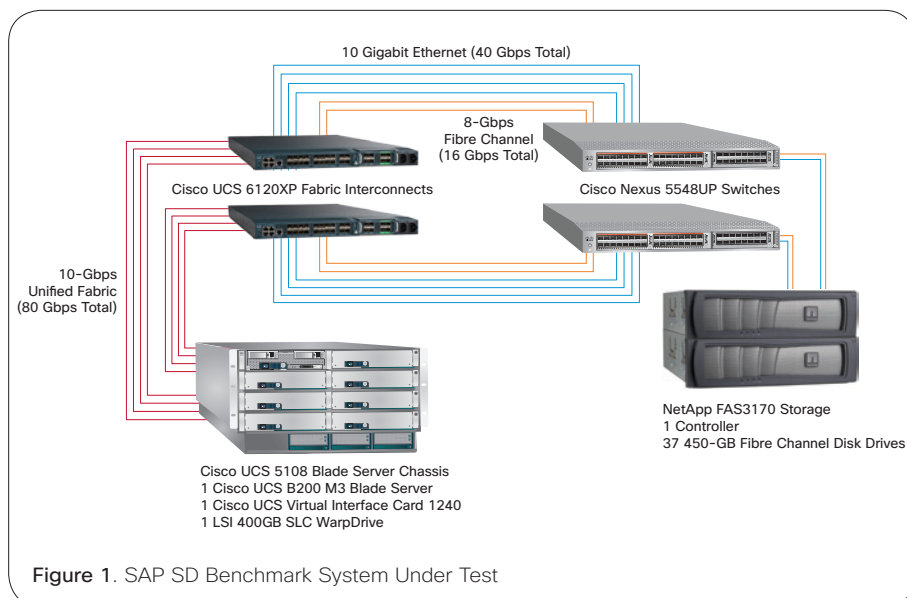
Cisco Unified Computing System

Cisco UCS is the first data center platform that integrates industry-standard, x86-architecture Intel Xeon processor-based servers with networking and storage access into a unified system. Server, networking, storage, and intelligent management resources work together in a self-aware and self-integrating system. This design delivers greater computing density and network simplicity in a smaller footprint that reduces operating costs.

Fabric interconnects bring a high-bandwidth, low-latency, 10-Gbps unified fabric to each server that carries IP, storage, and management traffic over a single set of cables. The system represents a radical simplification compared to traditional architectures, resulting in lower capital and operating costs.

Cisco UCS B200 M3 Blade Server

The Cisco UCS B200 M3 is a blade server without compromise. Powered by the Intel Xeon processor E5 family, the half-width blade server offers 24 DIMM slots (up to 768 GB total capacity when equipped with 32-GB DIMMs) to support large virtual machine footprints. It is the first blade server anywhere to provide built-in programmable I/O connectivity, delivering the utmost in I/O bandwidth and flexibility.



Red Hat Enterprise Linux and SAP Sybase ASE Server

Optimized to work together, Red Hat Enterprise Linux and Sybase ASE Server deliver a robust foundation for SAP applications. Support for large memory configurations and processor counts and caching optimizations in the operating system combine with Sybase ASE Server storage optimizations and text management efficiencies to deliver accelerated access to SAP business applications and information.

Fabric Interconnects

Typically deployed in redundant pairs, the Cisco fabric interconnect provides uniform access to networks and storage. With many ports in one rack unit (1RU) and equipped with an expansion module, Cisco fabric interconnects offer high port density, reduced port-to-port latency, and centralized unified management with Cisco UCS Manager. The benchmark

configuration used Cisco UCS 6120XP 20-Port Fabric Interconnects equipped with a Fibre Channel expansion model. The Cisco UCS 6248UP 48-Port Fabric Interconnect is available when greater port density is required.

Cisco Nexus 5548UP Switch

The Cisco Nexus 5548UP Switch provides a unified converged fabric over 10 Gigabit Ethernet for LAN, SAN, and cluster traffic. This unification enables network consolidation and greater utilization of previously separate infrastructure and cabling, reducing by up to 50 percent the number of adapters and cables required, eliminating separate infrastructure.

LSI 400GB SLC WarpDrive

The LSI 400GB SLC WarpDrive enables storage performance to be decoupled from storage capacity. Using solid-state disk technology and intelligent caching software, the LSI 400GB SLC

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WarpDrive integrates a powerful new memory tier that is uniquely designed to accelerate in-server application performance for database workloads. Offered as a Small Form-Factor (SFF) PCI Express card that uses a Cisco blade server's mezzanine card slot, the device provides low-latency access to 400 GB of high-performance SLC NAND flash storage that is excellent for low-latency database log file write operations or "hot" database tables.

Benchmark Results

As shown in Table 1, the Cisco UCS B200 M3 Blade Server recorded the best two-way SAP SD Benchmark result on SAP Enhancement Package 5 for SAP ERP 6.0 and Sybase ASE 15.7. 6530 SAP SD Benchmark users were supported while maintaining consistent application response of less than one second.

By using the LSI 400GB SLC WarpDrive adapter, the server was able to accommodate the low latencies required by Sybase ASE database software. In combination with the high-performance NetApp FAS3170 storage system for data access, the integrated flash storage tier and fast processing and interconnect technology in Cisco UCS enabled the Cisco UCS B200 M3 to deliver 2,141,000 dialog steps per hour and 713,670 fully processed order line items per hour, resulting in a calculation of 35,680 SAPs.

Table 1. SAP SD Benchmark Results (Certification Number [2013001](#))

Number of SAP SD Benchmark users	6,530	Central Server: Cisco UCS B200 M3 server, 2 processors (16 cores and 32 threads), Intel Xeon Processor E5-2690, 2.90-GHz, 64 KB L1 cache and 256 KB Layer 2 cache per core, 20 MB Layer 3 cache per processor, 256 GB main memory. Operating System: Red Hat Enterprise Linux 6.3 RDBMS: Sybase ASE 15.7 SAP Business Suite Software: SAP Enhancement Package 5 for SAP ERP 6.0
Average dialog response time	0.98 second	
Fully processed order line items per hour	713,670	
Dialog steps per hour	2,141,000	
SAPS	35,680	
Average database request time	0.015 second (dialog) 0.036 second (update)	
CPU utilization (central server)	99 percent	

Conclusion

When thousands of users rely on SAP Business Suite applications, computing, network, and storage bottlenecks can affect business operation. By deploying SAP Business Suite on Cisco UCS configured with LSI solid-state storage and running Sybase ASE Server, IT departments can support more users and accelerate response.

Many users can be supported—up to 6530 in the benchmark configuration—with little hardware. IT departments can choose from a full range of Cisco UCS blade and rack server models to scale deployments further with larger servers, or add servers, to create scale-out deployments with a small footprint. These innovations and a dramatic

reduction in the number of physical components demonstrate Cisco's commitment to delivering systems that provide value to SAP deployments.

For More Information

For SAP benchmark results, please visit <http://www.sap.com/campaigns/benchmark/index.epx>.

For more information about Cisco UCS servers, please visit <http://www.cisco.com/go/ucs>.

For more information about Cisco UCS performance, please visit <http://www.cisco.com/go/ucsatwork>.



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