Cisco UCS B200 M3: Scalable Performance for SAP Business Suite Applications

With the Versatile Intel Xeon Processor E5-2600 v2 Family

Performance Brief
September 2013

Cisco achieves 45 percent better performance and delivers impressive scalability to SAP Business Suite applications.

Deriving big answers from big data, and doing so quickly, requires computing infrastructure with accelerated processing capabilities and high throughput. Cisco's results on the SAP Sales and Distribution (SD) Benchmark—support for up to 9510 concurrent users and a 52,038 SAP Application Performance Standard (SAPS) score—demonstrate how a Cisco UCS® B200 M3 Blade Server configured with the new Intel® Xeon® processor E5-2600 v2 product family delivers 45 percent better performance improvement than previous-generation systems.

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 6.4. The server was configured with two 2.70-GHz, 12-core Intel Xeon processor E5-2697 v2 CPUs and 256 GB of 1866-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. SAP Enhancement Package 5 for SAP Enterprise Resource Planning 6.0 was used in this scenario. One LSI 400GB SLC WarpDrive provided solid-state disk capacity for the underlying database as well as database log files that require low-latency write access.

The Cisco UCS B200 M3 server was connected to a pair of Cisco UCS 6248UP 48-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 E5-2600 v2 product 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.

The Intel Xeon processor E5-2600 v2 product family is at the center of an agile, efficient data center that meets a diverse set of needs, including the needs of SAP workloads. Through Intel's industry-leading 22-nanometer (nm) 3-D Tri-Gate transistor technology, these versatile processors

Figure 1. SAP SD Benchmark System Under Test
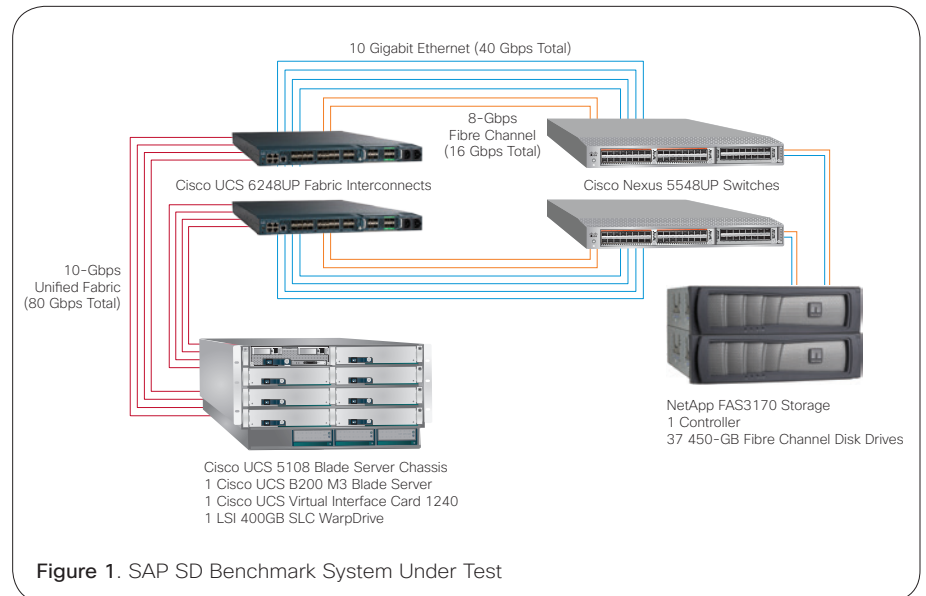
deliver significantly greater performance and power efficiency than the previous generation of Intel Xeon processors. The processor family offers more cores with more threads, more processor cache, faster main memory, and lower power consumption by intelligently matching core, memory, cache, and I/O power to system demand.

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 in combination with Sybase ASE Server storage optimizations and text management efficiencies delivers 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 6248UP 48-Port Fabric Interconnects equipped with a Fibre Channel expansion model.

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. Offered as a Small Form-Factor (SFF) PCI Express (PCIe) 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-memory storage that is excellent for low-latency database log file write operations or "hot" database tables.

Benchmark Results

The Cisco UCS B200 M3 Blade Server running Red Hat Enterprise Linux 6.4 recorded the best two-way SAP SD Benchmark result on SAP Enhancement Package 5 for SAP ERP 6.0 and Sybase ASE 15.7. The solution supported 9510 SAP SD Benchmark users while maintaining a consistent application response time of less than one second (Table 1).

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-memory storage tier and fast processing and interconnect technology in Cisco UCS enabled the Cisco UCS B200 M3 to deliver 3,122,310 dialog steps per hour and 1,040,770 fully processed order line items per hour,

Table 1. SAP SD Benchmark Results

Number of SAP SD Benchmark users	9510	**Central server:** Cisco UCS B200 M3 server, 2 processors (24 cores and 48 threads), Intel Xeon processor E5-2697 v2, 2.70-GHz, 64-KB Level 1 (L1) cache and 256-KB L2 cache per core, 30 MB L3 cache per processor and 256 GB main memory. **Operating system:** Red Hat Enterprise Linux 6.4 **Relational database management system (RDBMS):** Sybase ASE 15.7 **SAP Business Suite Software:** SAP Enhancement Package 5 for SAP ERP 6.0
Average dialog response time	1144 milliseconds	
Fully processed order line items per hour	1,040,770	
Dialog steps per hour	3,122,310	
SAPS score	52,038	
Average database request time	24 milliseconds (dialog) 35 milliseconds (update)	
CPU utilization (central server)	97%	

resulting in a SAPS score of 52,038. This result is a 45 percent improvement over the 35,680 SAPS score delivered by Cisco UCS B200 M3 servers configured with previous-generation processors.

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 times. Many users can be supported—up to 9510 in the benchmark configuration—with little hardware. IT departments can

choose from a broad range of Cisco UCS blade and rack server models to scale deployments further by using larger servers or by adding servers to create scale-out deployments with a small footprint. These innovations plus a dramatic reduction in the number of physical components needed in the data center demonstrate Cisco's commitment to delivery of 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 performance, please visit http://www.cisco.com/go/ucsatwork.