Cisco UCS B200 M3 Blade Server: High Performance and Flexibility for Virtualized SAP Business Suite Deployment

Performance Brief
March 2013

Highlights

Deploy a Solution with the Best 2-Socket Virtualized Result

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

Use Virtualization to Increase Flexibility and Reduce Costs

- Using the Cisco Unified Computing System™ (Cisco UCS®), IT departments can run virtualized SAP Business Suite applications with the flexibility, scalability, and lower cost of virtualized environments.

Support a Growing User Base

- Cisco UCS running Sybase Adaptive Server Enterprise (ASE) and configured with an LSI 400-GB SLC WarpDrive delivers a scalable foundation for deployments of SAP Business Suite software.

Standardize on an Industry-Leading Solution

- When used with enterprise-class, open source operating system and virtualization software, Cisco UCS servers provide 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 5530 concurrent users in a virtualized RHEL and Sybase ASE Server environment.

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.

Business organizations gain the flexibility of deploying virtualized SAP landscapes while maintaining excellent performance.

Virtualization is a critical data center technology that helps business organizations increase utilization levels, more rapidly deploy and scale applications, and reduce cost by reducing server inventory. The Cisco Unified Computing System™ (Cisco UCS®) is a platform optimized for virtualized environments, and it helps give organizations the same flexibility to virtualize their SAP landscapes that they have for their less critical applications. Many organizations run their SAP Business Suite applications on costly RISC processors, using proprietary operating systems and expensive database management systems, but Cisco's first virtualized SAP Sales and Distribution (SD) Benchmark result demonstrates the benefits of a solution that uses intelligent Intel® Xeon® processors, open source operating systems, and Sybase Adaptive Server Enterprise (ASE).

Cisco's benchmark result for the Cisco UCS B200 M3 Blade Server show support for up to 5530 concurrent users and a SAP Application Performance Standard (SAPS) score of 30,270 derived from the processing of 605,330 order line items per hour and 1,816,000 dialog steps per hour. This result demonstrates that a Cisco UCS B200 M3 Blade Server configured with a LSI 400-GB SLC WarpDrive can deliver high scalability and low latency in virtualized SAP Business Suite deployments.

SAP Sales and Distribution Benchmark

The SAP SD Benchmark is designed to stress the solution architecture and determine whether a 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 UCS chassis equipped with one Cisco UCS B200 M3 Blade Server running Red Hat Enterprise Linux (RHEL) 6.4 on KVM. 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 15.7 in a single virtual machine. SAP Enhancement Package 5 for SAP Enterprise Resource Planning (ERP) 6.0 was used in

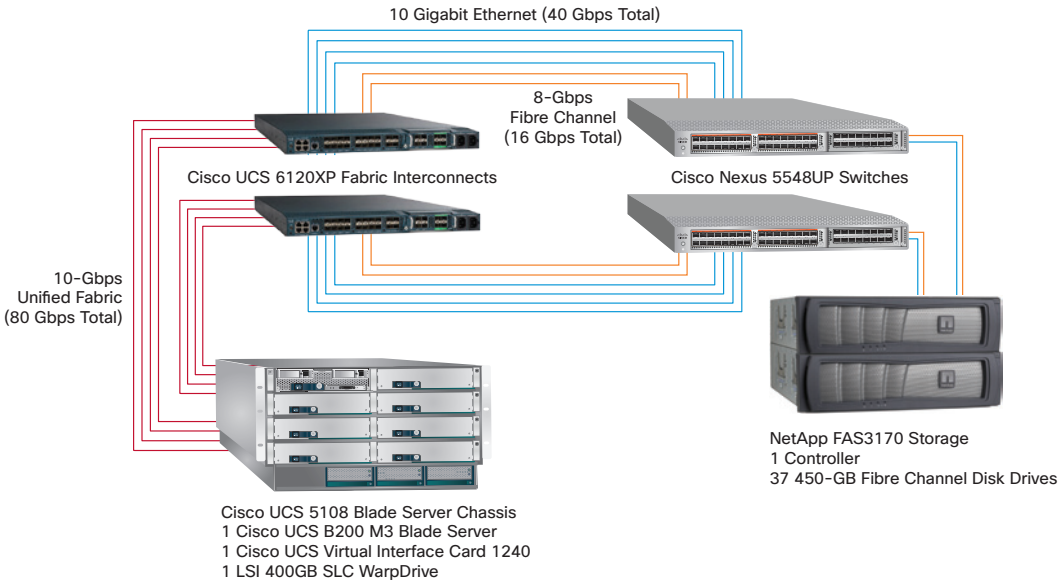

Figure 1. SAP SD Benchmark System Under Test

this scenario. One LSI 400-GB 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.

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, which reduces operating costs.

Cisco 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 outstanding I/O bandwidth and flexibility.

Red Hat Enterprise Linux and SAP Sybase ASE Server

Optimized to work together, RHEL, KVM, and Sybase ASE 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 storage optimizations and text management efficiencies to deliver accelerated access to SAP business applications and information.

Fabric Interconnects

Typically deployed in redundant pairs, Cisco® fabric interconnects 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 and eliminating the need for separate infrastructure.

LSI 400-GB SLC WarpDrive

The LSI 400-GB SLC WarpDrive enables storage performance to be decoupled from storage capacity. Using solid-state disk (SSD) technology and intelligent caching software, the LSI 400-GB SLC 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 (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 storage that is excellent for low-latency database log file write operations and online active ("hot") database tables.

Table 1. SAP SD Benchmark Results (Certification Number 2013007)

Number of SAP SD Benchmark users	5530	**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 6.4 on KVM. **RDBMS:** Sybase ASE 15.7 **SAP Business Suite Software:** SAP Enhancement Package 5 for SAP ERP 6.0
Average dialog response time	0.96 second	
Fully processed order line items per hour	605,330	
Dialog steps per hour	1,816,000	
SAPS	30,270	
Average database request time	0.021 second (dialog) 0.045 second (update)	
CPU utilization (central server)	97 percent	

Benchmark Results

As shown in Table 1, the Cisco UCS B200 M3 Blade Server recorded the best two-way virtualized SAP SD Benchmark result on SAP Enhancement Package 5 for SAP ERP 6.0 and Sybase ASE 15.7. In the test, 5530 SAP SD Benchmark users were supported while a consistent application response of less than one second was maintained.

By using the LSI 400-GB 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 1,816,000 dialog steps per hour, or 605,330 fully processed order line items per hour: the equivalent of a 30,270 SAPS score.

Conclusion

Many business organizations currently struggle with the cost of maintaining RISC processor–based servers running proprietary operating systems and third-party database management systems. Cisco UCS both enables organizations to use lower-cost industry-standard x86-architecture

servers, open source operating systems, and database management systems and allows organizations to run SAP Business Suite applications in virtualized environments. With Cisco UCS, organizations can easily balance workloads across a pool of servers to manage service levels according to business priorities, scale environments up and down as needed, and contain costs by consolidating workloads onto a smaller number of servers.

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 5530 in the benchmark configuration—with little hardware, and even with virtualization. IT departments can choose from a broad range of Cisco UCS blade and rack server models to scale deployments further using larger servers or additional servers to create scale-out deployments with a small footprint. These innovations and the dramatic reduction in the number of physical components required 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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