World-Record: Fastest Two-Processor Result for SAP

Using Cisco UCS B260 M4 Blade Servers with the Versatile Intel Xeon Processor E7-4800 v2 Family

Performance Brief
May 2014

Highlights

Deploy the Solution with the Best 2-Processor Result

- Cisco delivers the best 2-processor SAP Sales and Distribution (SD) Benchmark result, in a two-tier configuration, with performance accelerated by Cisco UCS Invicta™ Series Solid State Systems.

Standardize on an Industry-Leading Solution

- Deploy the Cisco Unified Computing System™ (Cisco UCS®) with Microsoft Windows Server 2012 for additional flexibility and efficiency. Cisco UCS servers make an excellent foundation for any standards-based infrastructure solution.

Scale to Meet Demand

- Results show that Cisco UCS B260 M4 Blade Servers configured with the Intel® Xeon® processor E7- 4800 v2 family can support up to 12,280 concurrent SAP SD Benchmark users in a Microsoft Windows Server 2012 and Microsoft SQL Server 2012 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 1,040,770 order line items per hour or 3,122,310 dialog steps per hour.

Simplify Data Center Infrastructure

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

Cisco achieves the best 2-processor 2-tier SAP Sales and Distribution (SD) Benchmark performance and delivers impressive scalability to SAP.

Deriving big answers from big data, and doing so quickly, requires computing infrastructure with accelerated processing capabilities and high throughput. Cisco's results for the SAP Sales and Distribution (SD) Benchmark—support for up to 12,280 concurrent users and a 67,020 SAP Application Performance Standard (SAPS) score—demonstrate how a Cisco UCS® B260 M4 Blade Server configured with the new Intel® Xeon® processor E7-4800 v2 product family delivers 79 percent performance improvement over previous-generation systems and 22 percent better performance improvement over the IBM POWER 7+ (Figure 1).

SAP Sales and Distribution Benchmark

The SAP SD Benchmark is designed to stress the computing infrastructure 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, real-world infrastructure experiences conditions similar to those found in two-tier SAP applications.

Benchmark Configuration

Cisco tested a Cisco UCS 5108 Blade Server Chassis populated with one Cisco UCS B260 M4 Blade Server running Microsoft Windows Server 2012 Datacenter Edition. The server was configured with two 2.80-GHz, 15-core Intel Xeon processor E7-4890 v2 CPUs and 512 GB of memory with a single Cisco UCS Virtual Interface Card (VIC) 1240 and a 3-TB Cisco UCS Invicta™ C3124SN Node. The blade server ran both the SAP and the 64-bit Microsoft SQL Server 2012 Enterprise Edition in a bare-metal configuration. SAP Enhancement Package 5 for SAP Enterprise Resource Planning (ERP) 6.0 was used in this measurement. SAN disk capacity of 222 GB was used for the underlying database and database log.

Cisco Unified Computing System

The 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 resources 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 expenditures and operating costs.

Cisco UCS B260 M4 Blade Server

The Cisco UCS B260 M4 Blade Server harnesses the power of up to two of the latest Intel Xeon processor E7 v2 family CPUs and accelerates access to critical data, with expandability to up to 1.5 terabytes (TB) of RAM (using 32-GB DIMMs). Standard features include two hot-pluggable disk drives or solid-state drives (SSDs), two modular LAN-on-motherboard (mLOM) ports, two PCI Express (PCIe) mezzanine slots, and access to up to 160 Gbps of overall I/O bandwidth. The Cisco UCS B260 M4 is a full-width blade server, so up to four can reside in a Cisco UCS chassis (Figure 2).

Figure 2. Cisco UCS B260 M4 Blade Server

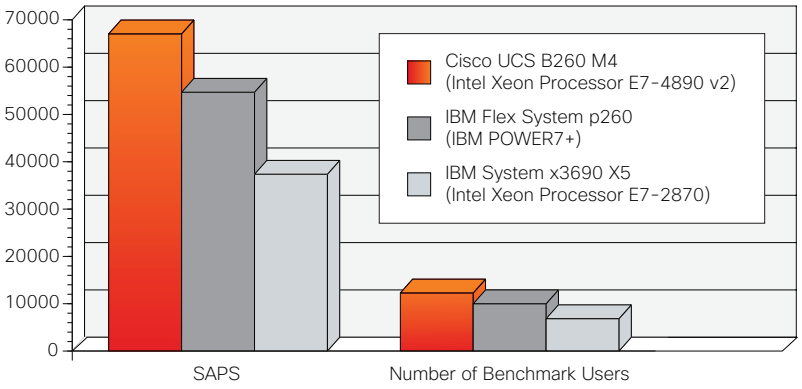

Figure 1. Cisco UCS B260 M4 Produced a Better SAPS Score and Supports More Users Than IBM x3690 X5 with the Previous-Generation Intel Xeon Processor E7-2870 (See SAP Disclosures 1)or the IBM FlexSystem p260 with IBM POWER 7+ Processors (See SAP Disclosures 2)

For the utmost scalability, two Cisco UCS B260 M4 servers can be interconnected to create a single Cisco UCS B460 M4 Blade Server, accommodating up to four Intel Xeon processor E7 v2 CPUs and up to 3 TB of main memory.

The Intel Xeon processor E7-4800 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. These versatile processors deliver significantly greater performance, scalability, and availability than the previous generation of Intel Xeon processors. The processor family offers more memory, faster data throughput, and increased reliability with Intel Run Sure Technology.

Move Data Closer to Applications

Cisco UCS Invicta Series Solid State Systems move data into the computing domain so that applications can run faster. Whether your environment performs random or sequential access operations or experiences read or write sensitivity, Cisco's holistic approach to integrated infrastructure can dramatically improve database and online transaction processing (OLTP) performance.

Solid-state-memory-powered application acceleration technology is built into the solution, offering excellent performance characteristics. Each Cisco UCS Invicta C3124SN Node can support 200,000 write I/O operations per second (IOPS) and 250,000 read IOPS to accelerate SAP data movement. If your SAP demands are greater, the Cisco UCS Invicta Scaling System allows you to pool and manage multiple appliances, scaling performance and capacity. Both solutions mitigate the risk of poor database performance and help

accelerate performance of your SAP, SQL, and Sybase applications

Benchmark Results

The Cisco UCS B260 M4 Blade Server running Microsoft Windows Server 2012 delivered a world-record two-tier SAP SD Benchmark result on SAP Enhancement Package 5 for SAP ERP 6.0 and Microsoft SQL Server 2012. The solution supported 12,280 SAP SD Benchmark users while maintaining a consistent application response time of less than one second (Table 1). Published results can be found on the SAP website at http://global.sap.com/solutions/benchmark/sd2tier.epx, SAP SD Benchmark Result Certificate Number 2014018.

Cisco UCS B260 M4 delivered a SAPS score of 67,020. This result is an 18 percent improvement over the 54,700 SAPS score delivered by IBM x3690 X5 servers configured with previous-generation processors and a 22 percent improvement over an IBM FlexSystem p260 running two IBM POWER 7+ processors.

Conclusion

Just as important as this record-setting result is the diligence with which Cisco performs benchmark testing and certifies its SAP environments. This diligence is revealed in this record-setting result as well as the consistent performance improvements that Cisco demonstrates with each new server generation. Cisco UCS has tripled the number of SAPS that its servers deliver (Figure 3)

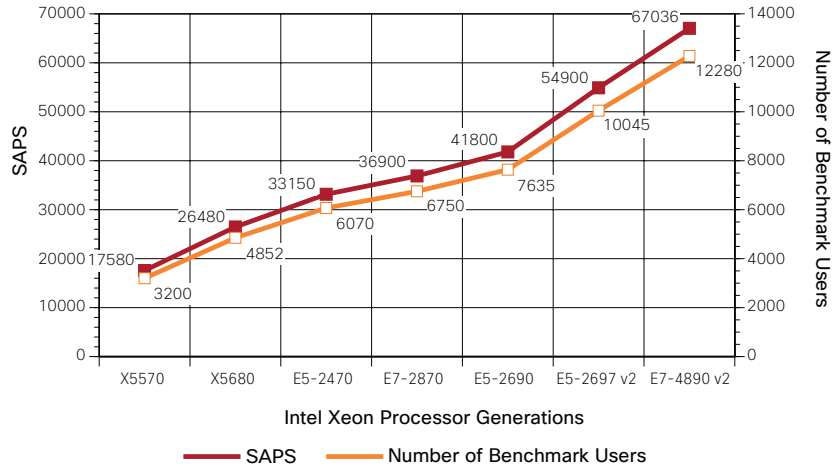

Figure 3. Generation After Generation, Cisco UCS Delivers Consistently Better 2-Tier SAP SD Benchmark Performance

Table 1. SAP SD Benchmark Results. SAP Certificate Number 2014018

Number of SAP SD Benchmark users	12,280	**Central server:** Cisco UCS B260 M4 server, 2 processors (30 cores and 60 threads), Intel Xeon processor E7-4890 v2, 2.80-GHz, 64-KB Level 1 (L1)cache and 256-KB L2 cache per core, 37.5 MB L3 cache per processor and 512 GB main memory, Cisco UCS Invicta C3124SN Node **Operating system:** Microsoft Windows Sever 2012 Datacenter Edition **Relational database management system (RDBMS):** Microsoft SQL Server 2012 Enterprise Edition **SAP Business Suite Software:** SAP Enhancement Package 5 for SAP ERP 6.0
Average dialog response time	1240 ms.	
Fully processed order line items per hour	1,340,395	
Dialog steps per hour	4,021,185	
SAPS score	67,020	
Average database request time	16 ms. (dialog) 23 ms. (update)	
CPU utilization (central server)	99 percent	

This result joins the more than 90 previous world-record performance results set by Cisco UCS since it was announced five years ago. Many of these world-record results use real-world workloads, including business applications, Java middleware, database performance, high-performance computing, and virtualized and cloud computing environments.

When thousands of users rely on SAP landscape applications, computing, network, and storage bottlenecks can affect business operation. By deploying SAP on Cisco UCS, IT departments can support more users and accelerate response times. Many users can be supported—up to 12,280 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 small footprints. Cisco UCS Invicta Series Solid State Systems bring data closer to the computing tier, increasing real-world application performance. 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.

SAP Benchmark Disclosures

The statement of comparison is based on highest-performing system using two Intel Xeon processors and running SAP Enhancement Package 5 for SAP ERP 6.0 in a 2-tier configuration.

Results referenced are from the SAP website at http://global.sap.com/solutions/benchmark/sd2tier.epx and are current as of May 5, 2014:

- IBM System x3690 X5, 2 processors, 20 cores, 40 threads, Intel Xeon processor E7-2870, 2.40 GHz, 64-KB L1 cache and 256-KB L2 cache per core, 30-MB L3 cache per processor, 256 GB of main memory, Microsoft Windows Server 2008 Enterprise Edition, IBM DB2 9.7, and SAP Enhancement Package 4 for SAP ERP 6.0; certification number 2011032
- IBM Flex System p260 Compute Node, 2 processors, 16 cores, 64 threads, IBM POWER7+, 4.10 GHz, 32-KB (I) and 32-KB (D) L1 cache and 256-KB L2 cache per core, 10-MB L3 cache per core, 256 GB of main memory, IBM AIX 7.1, IBM DB2 10, and SAP Enhancement Package 5 for SAP ERP 6.0; certification number 2012035

For More Information

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

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