

Cisco UCS Delivers First-Ever SAP Concurrent Benchmark Results



Performance Brief
February 2015

Highlights

First-Ever Results

- Cisco is the first vendor to publish results on the new SAP Concurrent Benchmark, demonstrating how easily the Cisco Unified Computing System™ (Cisco UCS®) adapts to support applications.

SAP Certified

- Our results are certified by SAP on behalf of the SAP Benchmark Council so you can be confident that you can re-create a similar environment to run your business-critical applications in a virtualized environment.

All-Microsoft Environment

- Our results are based on a complete Microsoft software stack—hypervisor, operating system, and database management system—demonstrating how well Microsoft software can deliver virtualized performance on SAP applications

Flexibility for Your Data Center

- Our results show little overhead for virtualization, demonstrating that you can run any SAP NetWeaver-based business application concurrently, and you can use our SAP Sales and Distribution (SD) SAP Application Performance Standard (SAPS) score to estimate the server capacity you need.

You imagine SAP landscapes based on Microsoft software. We show you how you can run multiple applications concurrently with little performance impact.

Cisco is the first organization to publish a result for the [new SAP Concurrent Benchmark](#) and have it certified by SAP on behalf of the SAP Benchmark Council. The benchmark allows vendors to demonstrate how well their SAP environments work side by side in a shared environment. Getting a new benchmark running and tuned can be difficult for some vendors, but because the Cisco Unified Computing System™ (Cisco UCS®) is a platform built for virtualization we were the first to demonstrate results—and we did it all using virtualization with Microsoft software: the operating system, the database management system, and the hypervisor.

Compelling Results

We took a disk image of the software stack we used in November 2014 to claim the [best 2-socket server result for the SAP Sales and Distribution \(SD\) Benchmark using Microsoft Windows and Microsoft SQL Server](#). We made two copies and ran them both virtualized using Microsoft Windows 2012 R2 Hyper-V as the hypervisor. The hypervisor ran on a Cisco UCS C240 M4 Rack Server powered by Intel® Xeon® processors according to the benchmark rules.

The results show that you can now treat any SAP NetWeaver-based business application the same way as any other virtualized application in your data center, without special treatment, and you can expect excellent performance from Cisco UCS running Microsoft software. Our benchmarks show less than 7 percent overhead for virtualization, though your results will vary based on the SAP applications you choose. What this result means for you is increased freedom to manage your IT infrastructure as a single pool of resources, without the need for dedicated servers that sit idle whenever your SAP workloads are light.

SAP Concurrent Benchmark

Recently, the SAP Benchmark Council created a new category of concurrent benchmarks that allows benchmarking of multiple SAP dialog applications running concurrently using shared resources—in our scenario, on a single server. The benchmark rules allow the use of any supported partitioning and isolation technologies, including hypervisors, hardware partitioning, and operating system containers. With a benchmark designed by SAP to measure the performance of these environments, we now can make objective comparisons between the same

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SAP Concurrent Benchmark Results

SAP applications running on bare metal or in concurrent environments with results certified by SAP.

Benchmark Results

Not only did Cisco publish the first-ever results on this new concurrent benchmark, but the results are remarkable. Comparison of the results shown in Table 1 with the results for the same software configuration running on a bare-metal server (November 2014) shows that the penalty for running in a virtualized environment was only 6.6 percent in terms of benchmark users, and only 6.7 percent in terms of SAP Application Performance Standard (SAPS) score.

With the Cisco UCS C240 M4 Rack Server powered by the Intel Xeon

processor E5-2600 v3 product family, Cisco supports a total of 14,975 SAP SD users or a total SAPS score of 81,827. This result is excellent for virtualized environments and is further evidence that when you choose Cisco® servers and a complete Microsoft software stack, you have access to outstanding SAP performance.

Benchmark Configuration

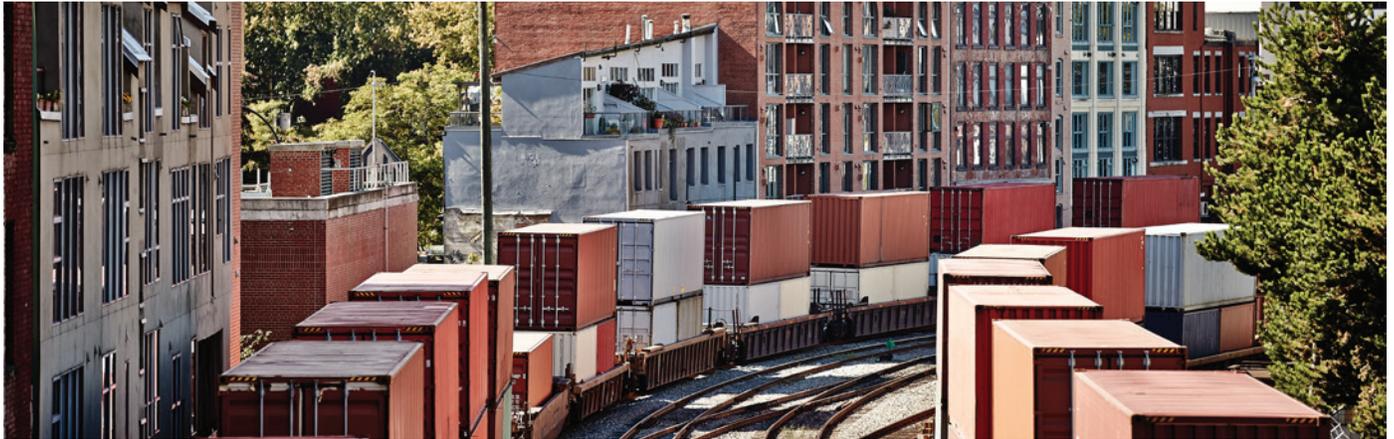
We tested a Cisco UCS C240 M4 server equipped with two 2.30-GHz, 18-core Intel Xeon processor E5-2699 v3 CPUs, 256 GB of main memory, and a Cisco UCS Virtual Interface Card (VIC) 1225. The server ran both the SAP software and 64-bit Microsoft SQL Server 2012 Enterprise Edition in a virtualized configuration running on

Microsoft Windows 2012 R2 Hyper-V. Each of the two virtual machines was configured with 36 virtual CPUs (vCPUs) and 120 GB of memory. SAP Enhancement Package 5 for SAP Enterprise Resource Planning (ERP) 6.0 was used in this measurement.

Microsoft SQL Server 2012 ran on each virtual machine, with the databases sharing six internal solid-state disk (SSD) drives managed by a Cisco FlexStorage 12-Gbps SAS RAID controller. The database logs were stored on a direct-attached Accela storage array. The hypervisor and virtual machine images were booted in managed mode from an image stored on a shared EMC CLARiiON CX4 storage system.

Table 1. First-Ever SAP Concurrent Benchmark Results Compared to Cisco's Most-Recent Nonvirtualized Result

Benchmark	Component	Number of SAP SD Benchmark Users	SAPS Score	Average Dialog Response Time (seconds)	Average Database Request Time (ms)		Average CPU Utilization Rate
					Dialog	Update	
SAP Concurrent Benchmark Two SAP SD benchmarks SAP certification 2015002	SAP SD 2015002_1	7584	41,458	0.99	17	25	99%
	SAP SD 2015002_2	7391	40,369	0.98	15	27	99%
Total		14,975	81,827				
SAP SD Benchmark (single) SAP certification 2014045	SAP SD	16,025	87,680	0.97	15	30	99%
Performance difference compared to nonvirtualized result		-6.6%	-6.7%				



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.

Cisco SingleConnect technology brings to each server a high-bandwidth, low-

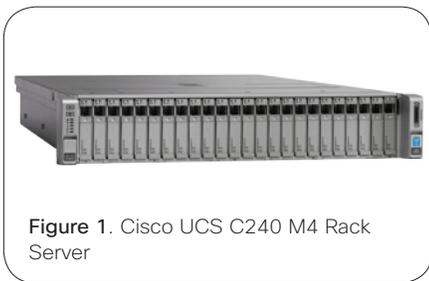


Figure 1. Cisco UCS C240 M4 Rack Server

latency, 10-Gbps unified fabric 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 (CapEx) and operating expenses (OpEx).

Cisco UCS C240 M4 Rack Server

The Cisco UCS C240 M4 delivers the balanced I/O, memory, and computing capacity needed for large-scale analytical and business intelligence applications (Figure 1). The system is a 2-rack-unit (2RU) rack server supporting the Intel Xeon processor E5-2600 v3 product family with up to 1.5 terabytes (TB) of memory. The server supports a wide range of storage options that can be supported by optional modular RAID controllers. It supports up to 12 Large Form-Factor (LFF) or 24 Small Form-Factor (SFF) hot-pluggable SAS or SATA or SSD drives, and up to two internal SFF boot drives. For I/O expansion, the server

supports up to six Generation 3 PCI Express (PCIe) cards.

Powered by the Versatile Intel Xeon Processor E5 v3 Family

Cisco UCS C240 M4 Rack Servers harness the power of up to two of the latest Intel Xeon processor E5-2600 v3 family CPUs to deliver an outstanding combination of performance, built-in capabilities, and cost effectiveness. Whether your business needs to address technical computing challenges, deliver cloud capabilities and intelligent storage, or power design automation and data analytics, Cisco and Intel technology are the smart choice for a software-defined environment in which performance and efficiency matter most.

Conclusion

Many organizations and SAP administrators prefer to run their landscapes on Microsoft software stacks. This first-ever SAP Concurrent

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Benchmark result shows just how easily you can incorporate virtualization software from Microsoft to add more flexibility to SAP application deployments with little performance impact.

Now you can use our SAPS score certified by SAP on behalf of the SAP Benchmark Council to estimate your capacity on Cisco UCS running Microsoft software and run all your SAP landscapes in a shared environment with higher utilization rates and with less infrastructure.

Cisco is the first vendor to demonstrate performance on this new benchmark, underscoring our continued diligence in obtaining SAP certifications and engineering better performance from Cisco UCS so that you can benefit from the best capabilities that the industry has to offer.

For More Information

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

SAP Benchmark Disclosures

Results referenced are available from the SAP website at <http://www.sap.com/benchmarks> and were current as of February 3, 2015.

Configuration Details

- **Central server:** Cisco UCS C240 M4 (2 processors, 36 cores, and 72 threads), Intel Xeon processor E5-2699 v3 at 2.30 GHz with 64-KB Level-1 cache, 256-KB Level-2 cache per core, 45-MB Level-3 cache per processor, and 256 GB of main memory

- **Virtual machines:** two identical virtual machines, each with 36 vCPUs and 120 GB of memory
- **Operating system:** Microsoft Windows Server 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
- **Hypervisor:** Microsoft Windows 2102 R2 Hyper-V



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