

Cisco Publishes New Big Data Benchmark Results for Data Set Sizes of 3, 30, and 100 TB



Cisco UCS Integrated Infrastructure for Big Data Is a Leading Platform for Enterprise Hadoop Deployments

Performance Brief
November 2015

Highlights

Commitment to Industry Standards

- Cisco continues to demonstrate its commitment to industry-standard benchmarks by setting more than 100 world records since Cisco Unified Computing System™ (Cisco UCS®) was announced in 2009.

First Big Data Benchmark Results

- Cisco was the first vendor ever to publish TPC Express Benchmark-HS (TPCx-HS) results, demonstrating its commitment to providing high-performance infrastructure for big data environments.
- These new results establish Cisco as the industry performance leader at scale factors of 3, 30, and 100 terabytes (TB).

Fair Comparison Standard

- TPCx-HS is designed to provide a fair standard of comparison for big data hardware and software configurations.

Performance and Scalability

- The benchmark results reported in this document highlight the performance and scalability of Cisco UCS Integrated Infrastructure for Big Data.
- The infrastructure is ready for Cisco® Application Centric Network (Cisco ACI™).

Cisco demonstrates first-ever 100-terabyte (TB) and best 3-TB and 30-TB results on the TPC Express Benchmark HS (TPCx-HS) with Cisco UCS® Integrated Infrastructure for Big Data.

Your business needs to make decisions based on massive amounts of data at a response time that the business demands. Cisco shows how quickly you can bring up your big data environments with its results on the new TPCx-HS benchmark. Cisco is the first to market with the results for this new benchmark and the first to demonstrate results at scale factors of 1, 30, and 100 TB. Today, Cisco demonstrates leadership with best performance at the scale factors of 3 and 30 TB, and is the first vendor to publish results for a scale factor of 100 TB (Table 1). These results are made possible with Cisco UCS Integrated Infrastructure for Big Data, an industry-leading platform widely adopted across industry vertical markets that provides a fast and simple way to deploy big data environments.

Table 1. TPCx-HS Benchmark Results with Cisco UCS Integrated Infrastructure for Big Data

Scale	Number of Cisco UCS C240 M4 Rack Servers	Performance and Price/Performance	Availability Date
3 TB ¹	16	11.76 HSph@3TB US\$44,052.98/HSph@3TB	September 24, 2015
30 TB ²	32	23.42 HSph@30TB US\$36,800.52/HSph@30TB	October 26, 2015
100 TB ³	32	21.99 HSph@100TB US\$39,193.64/HSph@100TB	October 26, 2015

1. See www.tpc.org/5508. 2. See www.tpc.org/5514. 3. See www.tpc.org/5513.

Industry-Standard Benchmark for Big Data Systems

The TPCx-HS benchmark was developed in response to the growing need for a vendor-neutral way to evaluate the performance and price-to-performance ratio of big data implementations. TPCx-HS provides an objective measure of hardware, operating system, and commercial software distributions compatible with the Apache Hadoop Distributed File System (HDFS) API. The benchmark models continuous system availability, 24 hours a day, 7 days a week. The benchmark helps assess a broad range of system topologies and implementation methodologies in a technically rigorous, directly comparable, vendor-neutral manner.

Configuration

The results reported here were achieved using Cisco UCS Integrated Infrastructure for Big Data powered by Cisco UCS C240 M4 Rack Servers interconnected using two Cisco UCS 6296 96-Port Fabric Interconnects with embedded management using Cisco UCS Manager and a Cisco Nexus® 9372PX Switch:

- **Cisco UCS C240 M4 Rack Servers** are 2-rack-unit (2RU) servers. For the results reported in this document, they were configured with two Intel® Xeon® processor E5-2680 v3 CPUs, 256 GB of memory, and 24 1.2-TB 10,000-rpm small form factor (SFF) disk drives. Cisco UCS virtual interface cards (VICs) provided high-bandwidth and low-latency cluster connectivity with support for up to 256 virtual devices.
- **Cisco UCS 6296 96-Port Fabric Interconnects** provide high-bandwidth, low-latency connectivity for servers and embedded, centralized management for all connected devices. These devices provide active-active redundancy, high performance, and exceptional scalability for the large number of nodes typical in big data clusters. Cisco UCS Manager enables rapid and consistent server integration using [Cisco UCS service profiles](#) which automate ongoing system maintenance activities such as firmware update operations across

the entire cluster as a single operation, advanced monitoring, and options to raise alarms and send notifications about the health of the entire cluster.

- **The Cisco Nexus 9372PX Switch** is a 1RU switch that supports 1.44 Tbps of bandwidth and more than 1150 million packets per second (mpps) across 48 fixed 10-Gbps Enhanced Small Form-Factor Pluggable (SFP+) ports and 6 fixed 40-Gbps Quad SFP+ (QSFP+) ports. The switches can operate using Cisco® NX-OS Software in a standard configuration, and they can be used to support Cisco Application Centric Infrastructure (Cisco ACI™) to take full advantage of an automated, policy-based, systems management approach.

Cisco UCS Integrated Infrastructure for Big Data

Cisco UCS Integrated Infrastructure for Big Data integrates all these components into a unified, fabric-based architecture optimized for big data workloads. It is a highly efficient, scalable, high-performance solution that can grow quickly and cost effectively. The solution can be scaled to thousands of nodes with Cisco Nexus 7000 or 9000 Series Switches. You can scale to thousands of servers and hundreds of petabytes of storage, all controlled from a single pane by Cisco UCS management.

Conclusion

The new TPCx-HS benchmark is designed to provide verifiable performance and price-to-performance metrics for big data systems. By publishing the first set of results, Cisco demonstrates the performance and price/performance ratio for real-life representative workloads, establishing a new trend in the world of performance benchmarking.

For More Information

- Read the [Cisco® blog about the TPCx-HS publication](#).
- Read the [Cisco blog about the TPCx-HS benchmark](#).
- View the [TPC press release about the new TPCx-HS benchmark](#).
- Review the [TPCx-HS benchmark specifications](#).
- Learn more about [Cisco UCS performance](#).

Disclosures

The Transaction Processing Performance Council (TPC) is a nonprofit corporation founded to define transaction processing and database benchmarks, and to disseminate objective and verifiable performance data to the industry. TPC membership includes major hardware and software companies. The performance results described in this document are derived from detailed benchmark results available as of October 23, 2015, at http://www.tpc.org/tpcx-hs/results/tpcxhs_perf_results.asp



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.