# Cisco UCS Delivers Big Results for Big Data and Analytics

New Results at the 1-TB and 10-TB Scale Factor on Cisco's Fourth-Generation Big Data and Analytics Platform

**Performance Brief**
March 2016

## Highlights

### Commitment to Industry Standards
- Cisco continues to demonstrate its commitment to industry-standard benchmarks by being the first vendor to publish TPC Express Benchmark-HS (TPCx-HS) results using the new Intel® Xeon® processor E5-2600 v4 family

### Accelerated Big Data Benchmark Results
- Cisco was the first vendor ever to publish TPCx-HS results. These new results establish Cisco as the industry performance leader at scale factors of 1 and 10 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.

## Cisco demonstrates best results at the 1-TB and 10-TB scale factor on the TPC Express Benchmark HS (TPCx-HS) with Cisco UCS® Integrated Infrastructure for Big Data and Analytics.
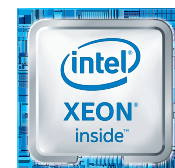
Big Data inundates IT infrastructure every minute of every day. Capitalizing on this information can make the difference for enterprises in an increasingly competitive and time-sensitive world. That's why many companies are turning to Big Data solutions that can help them make better decisions in less time. But how do you find the right solution that delivers the best performance at the right price? To help, Cisco demonstrated the capability of Cisco UCS Integrated Infrastructure for Big Data and Analytics using the TPCx-HS benchmark, an industry-standard benchmark that gives you a vendor-neutral way to evaluate the performance and price-to-performance ratio of solutions.

## Big Results for Big Data Deployments

Since its announcement in 2009, Cisco Unified Computing System™ (Cisco UCS) has set more than 100 world records on industry-standard benchmarks. The fourth-generation of Cisco UCS Integrated Infrastructure for Big Data and Analytics continues this trend, with leading performance and price-performance results on TPCx-HS at scale factors of 1 and 10 terabytes (TB) . It also achieved and continues to hold world-record results at 30- and 100-TB scale factors as shown in Table 1.

## Configuration

The results reported here were achieved using Cisco UCS Integrated Infrastructure for Big Data and Analytics powered by 2 Cisco UCS 6296UP 96-Port Fabric Interconnects with embedded management using Cisco UCS Manager and 16

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

| Scale | Connectivity and Management | Number of Cisco UCS C240 M4 Rack Servers and Processor Type | Performance and Price-to-Performance Ratio | Availability Date and Disclosure |
|---|---|---|---|---|
| 1 TB | Cisco UCS 6296UP 96-Port Fabric Interconnect Cisco UCS Manager | 16 servers Intel Xeon processor E5-2680 v4 | 10.12 HSph@1TB US$38,168.98 per HSph@1TB | March 31, 2016 |
| 10 TB | | 16 servers Intel Xeon processor E5-2680 v4 | 12.02 HSph@10TB US$32,135.61 per HSph@10TB | March 31, 2016 |
| 30 TB | | 32 servers Intel Xeon processor E5-2680 v3 | 23.42 HSph@30TB US$36,800.52 per HSph@30TB | October 26, 2015 |
| 100 TB | | 32 servers Intel Xeon processor E5-2680 v3 | 21.99 HSph@100TB US$39,193.64 per HSph@100TB | October 26, 2015 |

Cisco UCS C240 M4 Rack Servers powered by the new Intel® Xeon® processor 2600 v4 family.

**Cisco UCS 6296UP 96-Port Fabric Interconnects** provide high-bandwidth, low-latency connectivity for servers and embedded 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.

**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 v4 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.

**Intel Xeon processor E5-2680 v4 CPUs** provide the best balance of performance, power efficiency, and features to meet the diverse needs of your data center applications and workloads. Built on 14-nanometer (nm) processor technology, these innovative processors offer up to 22 cores, large high-speed memory configurations, and accelerated I/O throughput, delivering significant performance improvements compared to previous-generation processors. The processors also offer increased memory bandwidth monitoring and cache allocation capabilities, optimum data center orchestration and virtualization features, and hardware-assisted security advancements, which work in conjunction with Cisco UCS servers to further enhance the value of IT infrastructure in your enterprise.

Cisco UCS Integrated Infrastructure for Big Data and Analytics integrates these components into a unified, fabric-based architecture optimized for big data workloads and is available as a single-SKU solution bundle. You can quickly and cost-effectively grow this efficient, scalable, high-performance solution. You can scale to thousands of nodes with Cisco Nexus® 9000 Series Switches, and you can scale to thousands of servers and hundreds of petabytes of storage, all controlled from a single pane by Cisco UCS management. Widely adopted across industry vertical markets, the solution gives you a proven, fast, and simple way to deploy Big Data environments, accelerate data analysis, and quickly deliver results to users.

## For More Information

- Read the Cisco blog about the TPCx-HS benchmark.

- Review the TPCx-HS benchmark specifications.

- Learn more about Cisco UCS performance.

- Read the blog about Cisco UCS Integrated Infrastructure for Big Data.

- Learn about Cisco Validated Designs for Big Data.

## 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 March 31, 2016, at http://www.tpc.org/tpcx-hs/results/tpcxhs_perf_results.asp.