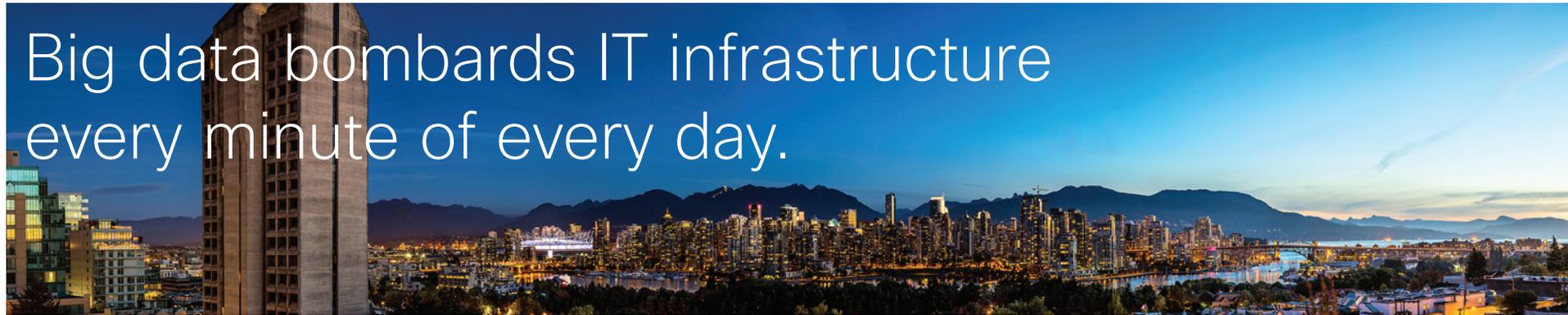


# Explore Big Data With Cisco UCS





Capitalizing on information can make the difference 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. Cisco Unified Computing System™ (Cisco UCS®) provides the extreme scalability your business needs to quickly mine a large amount of data and turn it into actionable intelligence for strategic advantage.

### Big Data Originates in Many Places

What is big data? Big data encompasses the collection, storage, and analysis of massive amounts of information, including data from web logs, sensors, tweets, blogs, user reviews, Short Message Service (SMS) messages, and data-intensive Internet applications. The data is characterized by high volumes of extremely large data sets that are predominately unstructured.

### Why Infrastructure Matters

Taking advantage of big data requires processing massive amounts of information and quickly delivering answers under fluctuating workloads. As your data stores increase in size, your big data solutions must perform, scale, and be resilient—without sacrificing management and operation efficiency.

### Cisco Delivers Fast Insight for Less

Cisco UCS integrates industry-standard, 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 that reduces operating costs for big data applications.

### Cisco UCS Common Platform Architecture for Big Data

The Cisco UCS Common Platform Architecture (CPA) for Big Data extends the strengths of Cisco UCS by offering computing and network scalability, performance, management, and monitoring that yields essential operation simplification, modularity, risk reduction, and lower total cost of ownership (TCO).

Integral Cisco UCS fabric interconnects offer a single connectivity and management plane for scale-out designs using both single-rack and multirack form factors. Cisco UCS virtual interface cards (VICs) enable unified fabric for single-wire management and direct SAN access. When applied to big data workloads, the architecture yields compelling performance advantages and significantly lower operating costs for companies across industries such as finance, healthcare, insurance, and government.



# Scale to New Heights

Software Solutions		
Oracle NoSQL Database	Oracle Real Application Clusters	
DataStax	MarkLogic	ParAccel
SAP Analytic Applications	SAP HANA	SAP ASE
Leading Hadoop Distributions		
MapR	Pivotal	
Cloudera	HortonWorks	
Leading Storage Solutions		
Cisco UCS Common Platform Architecture (CPA) for Big Data		

## Big Data: A Growing Trend

If your company is experiencing tremendous growth in the kinds and amounts of data generated, stored, and analyzed, you are not alone. Finding ways to cost-effectively scale computing and storage capacity can mean the difference between real-time insight and missed opportunities.

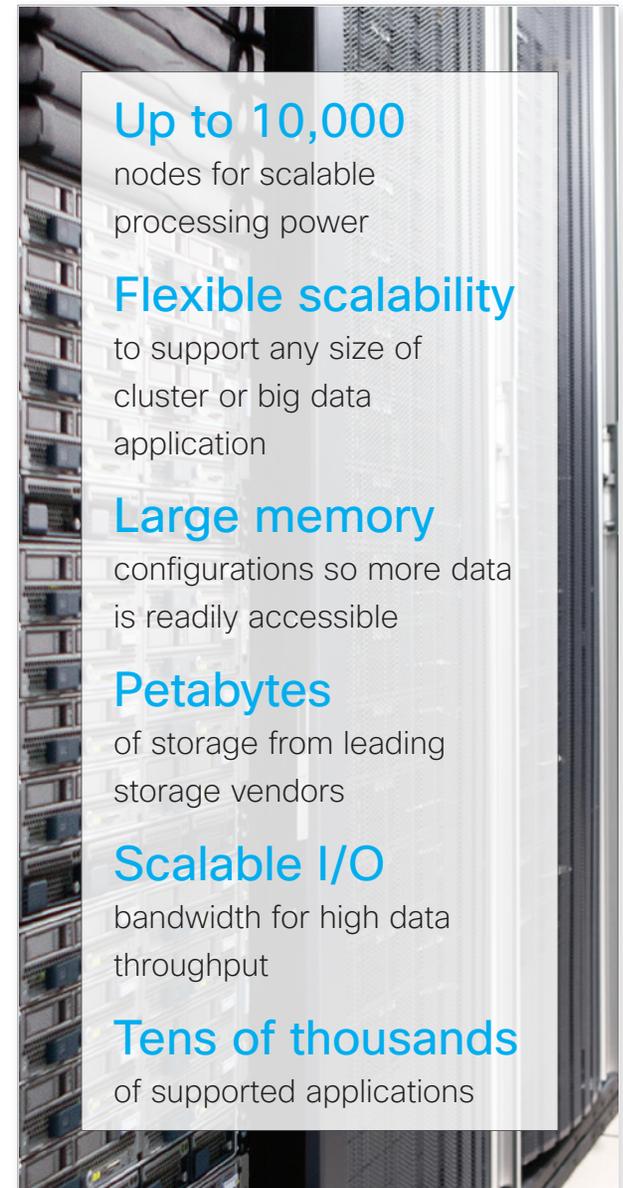
## Harness More Computing Power

With Cisco® technology, your data center can handle the most complex workloads. Big data clusters supported by hundreds of servers and petabytes of storage allow your IT department to scale solutions to meet big data demands. Up to 160 Cisco UCS servers are supported in a single switching domain, and you can add Cisco UCS Central Software to connect up to 10,000 servers.

## Take Advantage of Architectural Scalability and Simplicity

Cisco SingleConnect technology provides a single consistent way to connect blade and rack servers and physical and virtual machines. It establishes a logically centralized system in which connectivity is physically distributed among server racks and blade chassis in the form of low-cost, low-power-consuming fabric extenders. A single system can house both big data and enterprise applications. After the system is established, it can grow without the need to add switching components or redesign system connectivity or new points of management.

- Fewer network hops between servers
- Consistent latency between nodes
- Single point of management



**Up to 10,000**

nodes for scalable processing power

**Flexible scalability**

to support any size of cluster or big data application

**Large memory**

configurations so more data is readily accessible

**Petabytes**

of storage from leading storage vendors

**Scalable I/O**

bandwidth for high data throughput

**Tens of thousands**

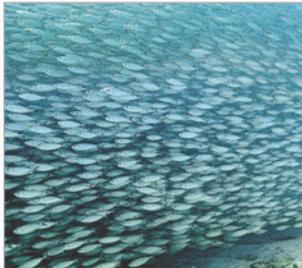
of supported applications



Nearly every company can benefit from faster access to the right information.

### Accelerate Data Loading and Access

Cisco and its storage partners make it easy to load terabytes of data into systems. The combination of direct access to high-performance SANs, high I/O bandwidth, and the solid-state memory-acceleration of Cisco UCS Invicta™ Series Solid-State Systems helps ensure that your data gets into systems and accelerates database operations so that applications and your business can respond in real time.



Industry-Leading Database Performance: **34% Faster**<sup>1</sup>

**26% Greater Profit When Using Data-Based Analysis**<sup>2</sup>



### Gain Insight in Less Time

Innovations in Cisco UCS, down to the application-specific integrated circuit (ASIC) level, deliver excellent big data performance. These innovations can help you:

- **Run big data and analytic applications better and faster** across the end-to-end fabric at the core of Cisco UCS
- **Accelerate the flow of information to your decision-making processes** with unified management that coexists with your business application infrastructure
- **Analyze information faster** by using more servers and distributing data-loading and analysis tasks to take advantage of massively parallel processing

### Automate Big Data Processes for Improved Business Intelligence

Cisco Tidal Enterprise Scheduler (TES) facilitates the flow of large quantities of data among applications such as Hadoop, enterprise resource planning (ERP), database, data warehouse, and business intelligence applications. The software automates the scheduling of processes that move data in and out of your big data file systems, running data feeds from inside and outside your firewall and processing big data workloads.

### Get World-Record-Setting Performance

The balanced resources of Cisco UCS, including high-performance processing, impressive I/O bandwidth, and large memory capacities, can help you achieve more performance with your big data implementations. Cisco UCS servers with versatile Intel Xeon processors have captured more than 90 world performance records with first-to-market results or results that exceed those set by other system vendors, including Dell, HP, and IBM as of the date of disclosure. Please visit <http://www.cisco.com/go/ucsatwork> to learn more.

1. Based on TPC Benchmark C Results on 2-processor systems as of January 1, 2014. Cisco UCS C240 M3 High-Density Rack Server with Oracle Database 11g Release 2 Standard Edition One, 1,609,186.39 tpmC, US\$0.47/tpmC, available September 27, 2012, compared to IBM Power 780 Server Model 9179-MHB with IBM DB2 9.5, 1,200,011.00 tpmC, US\$0.69/tpmC, available October 13, 2010. TPC Benchmark C is a trademark of the Transaction Performance Processing Council (TPC).
2. The article [The Advantages of Digital Maturity](#) in the November 2012 MIT Sloan Management Review shows that companies using big data analytics (along with social and mobile efforts) were 26 percent more profitable, with 9 percent more revenue and a 12 percent higher valuation than their competitors.



Deploy one rack at a time.

### Accelerate Infrastructure Deployment

Cisco UCS Manager abstracts server identity, personality, and I/O connectivity from the hardware and applies these characteristics automatically to new systems. This capability means that your IT department can reduce deployment time from days to minutes and replicate configurations easily and accurately for accelerated deployment and fast and easy growth patterns.

### Improve Visibility and Control

Cisco UCS Manager provides end-to-end management of all devices in the Cisco UCS platform. This visibility enables the monitoring and automated remediation of physical servers, storage, and network devices. You can:

- See what is happening in your infrastructure

- Remediate problems faster for continuous access to applications
- Prepare for the future with a system that is optimized for virtualization
- Manage a single system or multiple systems worldwide with Cisco UCS Manager and Cisco UCS Central Software
- Interoperate with existing management tools through the Cisco UCS XML management API

3. From the [Principled Technologies Test Report](#) comparing deployment of Cisco UCS B200 M3 Blade Servers to deployment of HP BL460c Gen8 blade servers, July 2013.

77 percent faster deployment<sup>3</sup>  
so your IT department can get big data solutions working for you in less time.

Wire your infrastructure once.



Add servers and storage.

Point and click to configure.

# Deliver Big Data Infrastructure in a Small and Efficient Footprint to Reduce TCO

## Is IT Infrastructure Holding You Back?

The Forrester Forrsights Budgets and Priorities Tracker Survey Q4 2012 reports that more than 70 percent of IT budgets is spent on capacity expansion, maintenance, and support—leaving less than 30 percent for IT innovation that supports business priorities. Imagine what you could do if your IT department could rebalance that equation and help your company implement big data solutions that can change the way you conduct business.

With Cisco UCS, your IT department really can do more with less. IT staff can perform more tasks with less effort, manage infrastructure better with fewer tools, and increase capacity in a smaller footprint—all of which translates to lower TCO and improved productivity. With the time and money saved, your IT staff can get to work on the big data solutions you've been waiting to implement.

## Simplicity That Saves Time and Money

In Cisco UCS, all I/O traffic meets at a single and redundant point for efficient and consistent management. This approach eliminates blade-server and hypervisor-resident switching, condensing three network layers into one. With 20 percent fewer components and automated configuration, your IT department can reduce capital and operating costs and improve IT efficiency for big data implementations.

- Single fabric
- Centrally managed, physically distributed system
- Unified management of blade and rack servers
- Fewer adapters: one Cisco UCS VIC compared to two to four adapters for competing solutions
- Fewer management points

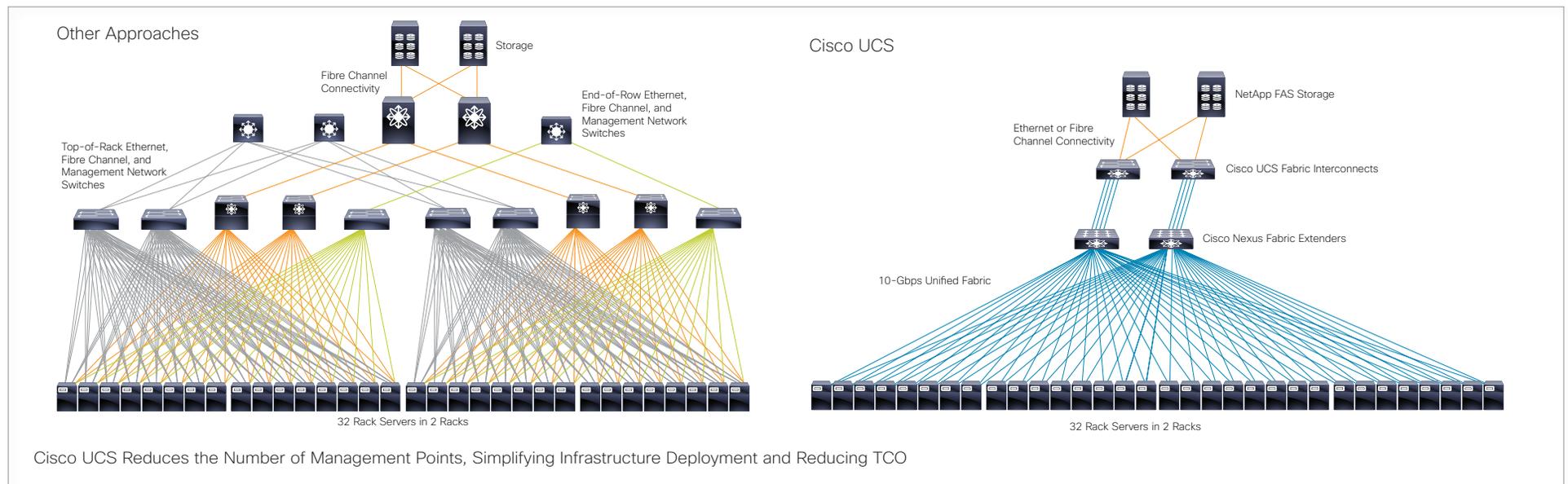
## Lower Infrastructure Cost

The capability to conserve capital expenditures (CapEx), reduce operating expenses (OpEx) through the efficient use of power resources, and simplify operation processes has helped Cisco UCS customers save in comparison to the cost of traditional servers.

- **45 percent 3-year TCO savings<sup>4</sup>** for Cisco UCS C240 M3 Rack Servers compared to IBM x3640 M4 servers in a 100-node configuration because Cisco SingleConnect technology uses fewer I/O adapters, Ethernet and Fibre Channel switches, and cables
- **20 percent 3-year TCO savings<sup>5</sup>** for Cisco UCS C240 M3 Rack Servers compared to HP DL380p Gen8 servers, in a Cisco UCS CPA v2 configuration with 16 nodes

4. Based on the Cisco UCS manufacturer's suggested retail price (MSRP) IBM retail price available at [ibm.com](http://ibm.com) on August 8, 2013.

5. Based on the Cisco UCS MSRP and HP retail price available at [hp.com](http://hp.com) on January 2, 2014.





Many IT professionals aren't ready for big data. Are you?

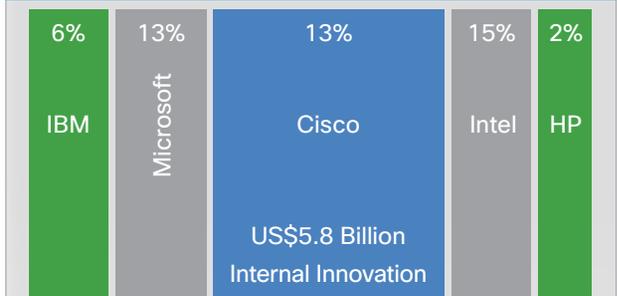
Cisco can help you reveal the business insights hidden in your data.

### For More Information

- To learn more about Cisco UCS, please visit <http://www.cisco.com/go/ucs>.
- To learn more about Cisco UCS performance, please visit <http://www.cisco.com/go/ucsatwork>.

6. Source: Yahoo Finance, company financial statements for the latest reported fiscal year.
7. Results from [TheInfoPro Servers and Virtualization Study](#), Wave 12, December 2012.
8. Source: IDC Worldwide Quarterly Server Tracker 2014Q1, Vendor Revenue Share.

### High R&D Investment in Innovation



R&D Investment as Percent of Revenue<sup>6</sup>

### Customer Satisfaction



Number-1 x86 Blade Server Vendor in North America<sup>8</sup>

### Conclusion

Every business decision is critical, so companies around the world look to big data solutions and analytic applications for better insight into their businesses. Now you can deploy business-critical tools on Cisco UCS and create scale-out solutions for powerful decision making. With the capability to add more high-performance computing and storage resources as data and user demands grow, your IT department can scale and deliver the right information at the right time.



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