

# Deploy Simple, Fast and Flexible Transactional Key-Value Storage with Cisco UCS Servers and the Oracle NoSQL Database

Solution Brief  
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Powered by Intel Xeon Processors



ORACLE

## Highlights

### Tested and Certified Solution to Reduce Cost and Risk

- Cisco and Oracle offer a comprehensive solution that helps organizations deploy Big Data solutions quickly, with configurations that scale easily and predictably as demand dictates.

### Commercially Supported Solution

- This enterprise-class solution is fully supported by Cisco and by Oracle, the largest database vendor in the world.

### Powerful and Cost-Effective Cisco UCS C-Series Rack-Mount Servers

- A choice of Cisco Unified Computing System™ (Cisco UCS™) servers with Intel® Xeon® processors deliver a best-in-enterprise-class, Big Data solution.

### Increased Agility with Cisco Nexus Switches

- Cisco Nexus® switches support the high-bandwidth and low-latency needs of Big Data solutions, improving infrastructure agility and scalability without arbitrary restrictions.

Rapidly analyzing hundreds of terabytes of data is an essential capability for gaining competitive advantage in today's Internet-propelled business environment.

The Oracle NoSQL database provides optimized distributed, highly available key-value storage for large-volume, latency-sensitive applications and web services. It can also provide fast, reliable, distributed storage to applications that need to integrate with extract, transform, and load (ETL) processing. Cisco and Oracle have partnered to deliver tested and certified solutions that help reduce risk when deploying Big Data solutions. Together, these solutions offer:

- Enterprise robustness and stability with the Oracle NoSQL database as the underlying storage engine
- Proven data center architecture using Cisco UCS™ C-Series Rack-Mount Servers powered by Intel® Xeon® processors
- High-bandwidth, low-latency Cisco Nexus® switches to meet the most demanding performance and scalability requirements at lower costs

Together these powerful and tightly integrated components provide infrastructure building blocks that can be used to deploy and scale effective Big Data infrastructure quickly and easily.

## Big Data and Oracle NoSQL Database

The capability to analyze high-volume, real-time data, such as website click streams, provides a significant business advantage that helps companies understand customer interests and buying patterns. Gaining this advantage requires the harnessing of unstructured and semistructured data sources to create more business value. Companies struggle to manage the vast amounts of data streaming in on a real-time or near-real-time basis. Traditional relational databases were unable to keep up with this magnitude of data in a cost-effective manner.

### Oracle NoSQL Database Brings Enterprise-Class Performance, Scalability, and Support

The Oracle NoSQL database uses the Oracle Berkeley DB Java Edition high-availability storage engine, which delivers distributed, highly available key-value storage for large-volume, latency-sensitive applications and web services. It can also provide fast, reliable, distributed storage to applications that need to integrate with ETL processing, common in database and data warehousing applications.

### Cisco UCS: Agility and Simplicity Delivers Efficiency

The solution integrates powerful Cisco UCS C-Series Rack-Mount Servers with Cisco Nexus switching. Servers are deployed in groups of three that incorporate a master and two replicas in a replication group. Fast and easy rack-level deployments use multiples of three servers: 36 one-rack-unit (1RU) or 18 2RU servers. The solution addresses the high-performance needs of Big Data solutions and helps address the business and operation requirements of evolving data centers. The benefits of this solution include:

- Enhanced business agility with increased operation continuity based on the modular Cisco® NX-OS Software operating system
- Infrastructure simplicity and a rack-at-a-time building-block approach with vast scalability, helping reduce the total cost of ownership (TCO)

- Capability to use existing operating models and administrative domains for easy deployment and increased efficiency

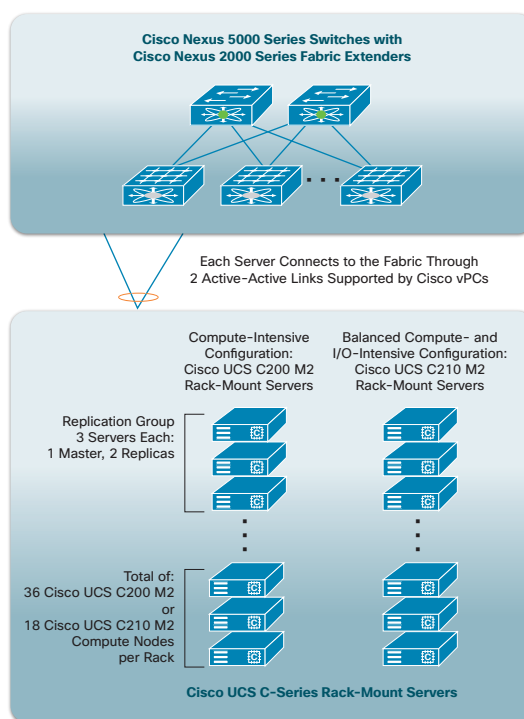
### Networking Purpose-Built for High-Performance Workloads

Enterprise Big Data solutions must deliver low TCO and ease of management while not sacrificing performance to meet business requirements.

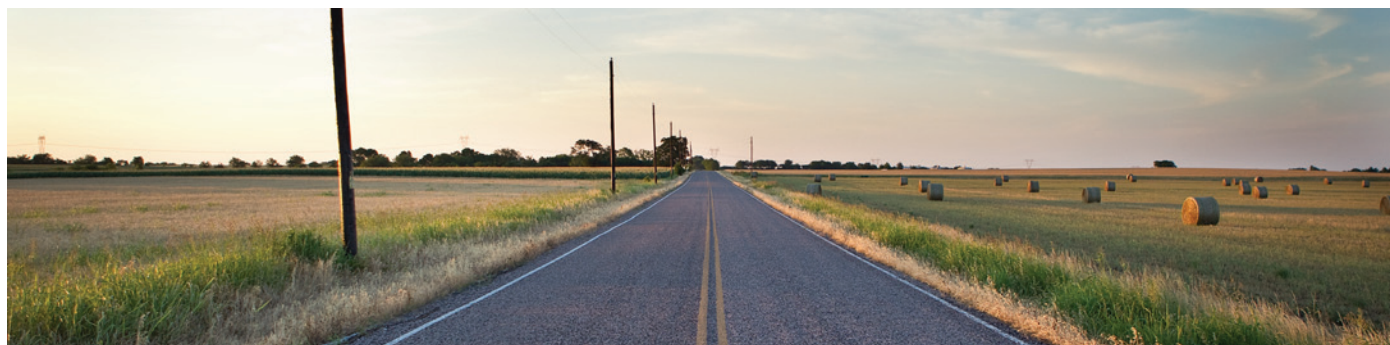
The Cisco Nexus 5500 switching platform combined with the Cisco Nexus 2200 fabric extender platform offers a state-of-the-art alternative to traditional architectures while delivering the industry's lowest TCO along with ease of management and high performance.

The combination of the Cisco Nexus 5500 and Cisco Nexus 2200 platforms offers:

- Low-latency, line-rate, cut-through switching architecture



**Figure 1.** The Cisco Solution Offers a Choice of Server Building Blocks and Network Connectivity, Allowing Organizations to Deploy Quickly and Scale Solutions as Required



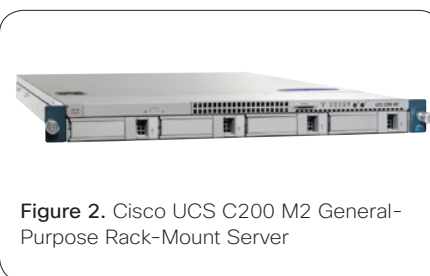
- A virtual modular system in which the switching infrastructure is logically centralized yet physically distributed, with the fabric extenders acting as remote line cards for the parent switch
- The benefits of both fixed and modular systems
- High scalability, with a single point of management for up to 1000 servers
- Architectural flexibility that supports both 1 and 10 Gigabit Ethernet connectivity
- Active-active connectivity and availability with Cisco virtual PortChannels (vPCs)
- True operational consistency across 1, 10, and 40 Gigabit Ethernet connectivity

### Industry-Standard Enterprise-Class Servers

Cisco UCS C-Series Rack-Mount Servers deliver world-record-setting performance in an industry-standard form factor to reduce TCO, increase agility, and increase customer choice. Cisco UCS C-Series Rack-Mount Servers address a range of workloads through a balance of processing, memory, I/O, and internal storage resources. Cisco has tested and certified two popular server configurations for Oracle NoSQL database to provide enterprise-class processing power for a range of workloads.

#### Dense, High-Performance Computing Power

The Cisco UCS C200 M2 High-Density Rack-Mount Server is a 2-socket, 1RU



**Figure 2.** Cisco UCS C200 M2 General-Purpose Rack-Mount Server

server (Figure 2). This server, which is ideal for dense and compute-intensive applications, offers:

- Up to two Intel Xeon 5500 or 5600 series processors
- Up to 192 GB of industry-standard double-data-rate 3 (DDR3) memory
- Up to eight 2.5-inch or four 3.5-inch internal SAS or SATA disk drives, for up to 8 terabytes (TB) of local storage

#### Balanced I/O Bandwidth and Computing Performance

For applications that require a balance of processor and I/O bandwidth with additional local storage capacity, the Cisco UCS C210 M2 General-Purpose Rack-Mount Server is a 2-socket, 2RU

#### Delivering Operational Consistency

Cisco Nexus 5500 switching platform supports operational consistency across the data center with the industry-proven modular Cisco NX-OS operating system. The Cisco Nexus 5500 Series also offers:

- A single domain to handle the large volume of east-west inter-rack communication
- Dynamic shared buffers that can withstand the largest workloads

## Deploy Simple, Fast and Flexible Transactional Key-Value Storage with Cisco UCS Servers and the Oracle NoSQL Database

**Table 1.** Rack-Level Solution Configuration Options

Solution Characteristics	Cisco UCS Servers	Number of Servers	Number of Processor Cores	Storage Capacity
Dense, high-performance option	Cisco UCS C200 M2	36	432	288 TB (SATA drives)
Balanced performance and I/O option	Cisco UCS C210 M2	18	192	288 TB (SATA drives) or 168 TB (SAS drives)

server (Figure 3). The server balances performance, density, and efficiency for storage-intensive workloads. It supports:

- Up to two Intel Xeon 5500 or 5600 series processors
- Up to 192 GB of industry-standard DDR3 memory
- Up to 16 2.5-inch internal SAS or SATA disk drives, for up to 16 TB of total storage



**Figure 3.** Cisco UCS C210 M2 High-Density Rack-Mount Server

### Cisco and Oracle: A Winning Combination

Resolve your Big Data challenges with tested and certified infrastructure from industry leaders Cisco and Oracle. The enterprise-class Oracle NoSQL database delivered in a modular, easy-to-deploy Cisco Unified Computing System™ (Cisco UCS) solution accelerates time-to-value and reduces risk. Customers can choose to deploy Cisco UCS C200 M2 or Cisco UCS C210 M2 servers depending on their business needs (see Table 1 for single-rack deployment options). The result is Oracle NoSQL database infrastructure designed to meet your performance, capacity, and scalability requirements.

### For More Information

- For complete details about Cisco Nexus switches: <http://www.cisco.com/go/nexus>
- For complete details about Cisco UCS C-Series Rack-Mount Servers: <http://www.cisco.com/go/ucs>
- For more information about Oracle and the Oracle NoSQL database: <http://www.oracle.com>



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