

Vendor Spotlight

Cisco Operationalizes Big Data for the Enterprise

Satinder Sethi, *Vice President, Cisco*

Satinder Sethi describes Cisco's approach to big data—a unique combination of infrastructure optimized for performance and capacity with unified management features and best-of-breed partner solutions that deliver an unprecedented choice of complete, validated architectures.

Beyond Infrastructure

Analyst surveys report that business analytics is one of the top issues for CIOs. I already know this at a personal level. At every briefing I attend, our customers are talking about big data. While most fully recognize the benefits, they grapple with how to embrace the technology at the enterprise level.

The [Cisco Unified Computing System*](#) (Cisco UCS*) delivers high-performing infrastructure that can be easily provisioned to meet demanding enterprise applications. But our approach to big data goes one step further: For Cisco, our story isn't complete without including the deep technology and engineering collaboration with our ecosystem partners that enables us to offer complete, validated big data solution stacks. Our comprehensive offerings free customers to focus on extracting value from their data rather than building an IT staff to deploy, provision, and manage large server clusters.

"Customers don't want to build another silo for big data in their data center. With Cisco's offering, big data can coexist with enterprise applications on the same architecture."

—Satinder Sethi

Common Architecture across Partner Solutions

To meet a variety of big data platform demands, Cisco offers a comprehensive solution stack: The Cisco* Common Platform Architecture (CPA) for Big Data includes compute, storage, connectivity, and unified management capabilities. Unique to this architecture are seamless data integration and management integration with an enterprise application ecosystem.

The current version of the CPA offers two options depending on use case:

- **Performance optimized.** This option offers balanced compute power with I/O bandwidth optimized for price/performance.
- **Capacity optimized.** This option is optimized for low cost per terabyte.

Each of these configurations is available in single rack and multiple rack scale and shipping today.

Built to Scale on Cisco UCS* Big Data Infrastructure

The CPA is built on Cisco UCS infrastructure using Cisco UCS 6200 Series Fabric Interconnects, Cisco Nexus* 2200 Series Fabric Extenders, and Cisco UCS C-Series rack mount servers. Installed in pairs, the Fabric Interconnects offer redundant active-active connectivity and embedded management using [UCS Manager](#).

The Fabric Extender technology provides highly scalable and extremely cost-effective connectivity for a large number of servers. The base rack supports up to 18 servers powered by Intel® Xeon® E5-2600 series processors and 24 Small Form Factor (SFF) disk drives in the performance-optimized option or 12 Large Form Factor (LFF) disk drives in the capacity-optimized option. To scale, customers simply add a pair of Cisco Nexus 2200 Series Fabric Extenders per rack and connect servers into the same topology created for the first rack. The management model scales and integrates the new servers.

Up to 160 servers are supported in a single Cisco UCS domain. Scaling beyond 160 servers is possible by interconnecting multiple UCS domains using Nexus 5000/7000 Series switches. Scalable to thousands of servers and hundreds of petabytes of data, these domains can be managed from a single pane by using [UCS Central](#) in a data center or distributed globally.

Operationalizing Big Data with Cisco UCS

Mainstream enterprise IT staff typically doesn't have the resources to optimize infrastructure for applications in complex big data environments. Cisco helps customers operationalize big data by delivering configurations that are already tested and validated. We work closely with our industry-leading partners to offer fully integrated stacks optimized for performance and scalability.

With solutions from market leaders already validated on Cisco UCS infrastructure, customers can rely on an environment that already works smoothly and delivers the performance required by big data workloads. Cisco solutions provide:

- **A high-performance and scalable unified fabric for big data implementations.** The low-latency, lossless 10 gigabit Ethernet (GbE) fabric provides full redundancy, delivering much higher performance compared to other vendor offerings. The same unified fabric can easily scale up without customers having to worry about integrating network and storage connectivity.
- **Ease of deployment.** Natively, Cisco UCS is a stateless computing architecture that relies on a service profile construct that abstracts a complete hardware state. During deployment, customers define their hardware profile in a service profile

template and apply it to each node in the cluster. This enables customers to deploy multiple nodes in literally minutes. To scale, customers use the same service profile template for new nodes, eliminating the need to provision each server independently. The great benefit here is agility and faster time to market.

- **Robust manageability.** Big data environments can consist of hundreds of servers with concomitant management complexity. Cisco UCS provides single-point management capabilities for the overall infrastructure—whether it's blade architecture on the enterprise application side or rack mount architecture on the big data side—and includes troubleshooting, monitoring, and alerting capabilities. Customers can proactively monitor the system and keep operational costs down.
- **Building on an existing customer base.** Cisco has more than 16,000 customers who already deploy Cisco UCS in their data centers. Many of these customers are now looking to deploy big data and can do so more easily by extending their current architecture. This is a considerable advantage, because if a customer is already running enterprise applications, they typically want to extend the value of that data by having the flexibility to move it between their traditional and big data systems. Overall infrastructure management and data management between systems becomes so much simpler when it runs on the same architecture.
- **Enterprise-class reliability and support.** Cisco delivers enterprise-class reliability and support beyond what commodity vendors offer.

The Cisco Advantage

- **Choice.** A broad partner ecosystem strategy provides customers with a choice of best-of-breed solutions for their specific needs.
- **Reliability.** A fully redundant architecture with full validation of partner stacks on Cisco UCS* hardware simplifies deployment and manageability.
- **Unified management.** Holistic management of the infrastructure through a single pane of glass.
- **Simplified configurations.** Easily consumable configurations make the ordering process easier.
- **Onsite deployment.** Our advanced services and our channel partners provide onsite deployment and installation services.

Cisco and Intel: Record-Breaking Performance

Intel is our only partner when it comes to supporting best-of-class CPUs. Cisco UCS servers powered by Intel Xeon processors have achieved over 60 world performance records during the past three years. For example, the Cisco UCS C240 M3 Rack Server with two Intel Xeon E5-2690 2.9 GHz processors and 768 GB memory running Oracle* Database 11g Standard Edition achieved the best two-processor [TPC Benchmark* C](#) (TPC-C) performance record of [1.6 million transactions per minute](#).^{1,2}

A Unique Position in the Market: Cisco UCS and Big Data

IT is at the early stages of operationalizing big data in the enterprise. As an infrastructure solution vendor, Cisco is in a unique position to offer customers critical architectural components that scale to support distributed processing with integrated management. Our exclusive partnerships enable us to provide customers with complete solution stacks that provide a choice of best-of-breed solutions and deliver additional value to our customers.

For more information about Cisco UCS, visit cisco.com/go/ucs.

Share with Colleagues



¹ Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests such as SYSmark and MobileMark are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

² Cisco UCS C240 M3 Rack Server, 1,609,186.39 tpmC, \$0.47/tpmC, available 9/27/2012. Source: Transaction Processing Performance Council (TPC), tpc.org.

This paper is for informational purposes only. THIS DOCUMENT IS PROVIDED "AS IS" WITH NO WARRANTIES WHATSOEVER, INCLUDING ANY WARRANTY OF MERCHANTABILITY, NON-INFRINGEMENT, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY WARRANTY OTHERWISE ARISING OUT OF ANY PROPOSAL, SPECIFICATION, OR SAMPLE. Intel disclaims all liability, including liability for infringement of any property rights, relating to use of this information. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted herein.

Copyright © 2012 Intel Corporation. All rights reserved. Intel, the Intel logo, Intel Sponsors of Tomorrow, the Intel Sponsors of Tomorrow logo, and Xeon are trademarks of Intel Corporation in the U.S. and other countries.

*Other names and brands may be claimed as the property of others.

