Cisco UCS B200 M3 Blade Server:
Outstanding Performance and Scalability for Oracle's JD Edwards EnterpriseOne Applications

Performance Brief
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Continuing its industry leadership, Cisco delivers impressive scalability and accelerated response to Oracle's JD Edwards EnterpriseOne applications.

Keeping pace with sophisticated applications of Oracle's JD Edwards EnterpriseOne software suite requires computing infrastructure that can support a large and growing user community and help ensure fast response times. Cisco's results on the JD Edwards EnterpriseOne Day in the Life (DIL) Benchmark–a weighted average response time of 0.182 second for up to 15,000 concurrent users using five ERP applications–demonstrate how Cisco UCS® B200 M3 Blade Servers, in combination with Microsoft SQL Server and EMC VNX5300 storage, deliver high scalability and outstanding performance to JD Edwards EnterpriseOne solutions.

JD Edwards EnterpriseOne Day in the Life Benchmark

Oracle's JD Edwards EnterpriseOne DIL Benchmark is designed to stress the solution architecture and demonstrate the deployment of thousands of concurrent users. The benchmark consists of a suite of scripts that exercise the most common transactions of Oracle's JD Edwards EnterpriseOne applications, including business processes such as payroll, sales order, purchase order, work order, and other manufacturing processes such as shipment confirmation. As a result, infrastructure platforms experience conditions similar to those found in large-scale JD Edwards EnterpriseOne application deployments.

Benchmark Configuration

The tested configuration consisted of a Cisco Unified Computing System™ (Cisco UCS) chassis equipped with six Cisco UCS B200 M3 Blade Servers. Two 2.90-GHz, 8-core Intel® Xeon® processor E5-2690 CPUs powered five of the Cisco UCS B200 M3 servers, and two 2.4-GHz, 8-core Intel Xeon processor E5-2665 CPUs powered the remaining server.

Two HTML servers were used, each configured with 256 GB of RAM and running multiple instances of Oracle WebLogic Server Version 10.3.5, with requests load balanced by an Oracle HTTP server. Two servers ran the ERP applications, each configured with 128 GB of RAM and running the JD Edwards EnterpriseOne Release

9.0, Update 2 software. The database server used 256 GB of RAM and ran Microsoft SQL Server 2008 R2 Enterprise Edition. A single server ran the JD Edwards Deployment Server and Server Manager and used 32 GB of RAM. Figure 1 shows the essential components needed for deployment on Cisco UCS and their placement within the platform architecture.

Each Cisco UCS B200 M3 server was connected to a pair of Cisco UCS 6248UP 48-Port Fabric Interconnects. Two high-performance Cisco Nexus® 5548 Switches provided access to data stored on an EMC VNX5300 Unified Storage System. EMC VNX Series storage systems provide scalable, high-performance infrastructure for applications with large data sets. Figure 2 shows the benchmark configuration.

Figure 1. Essential Components for JD Edwards EnterpriseOne Deployment on Cisco UCS

Cisco Unified Computing System

Cisco UCS is the first data center platform that integrates industry-standard, x86-architecture Intel Xeon processor-based servers with networking and storage access in 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.

Transcending the boundaries of traditional blade chassis and racks, Cisco UCS creates a physically distributed, centrally managed system that supports the solution's blade servers to deliver scalability and performance. Fabric interconnects
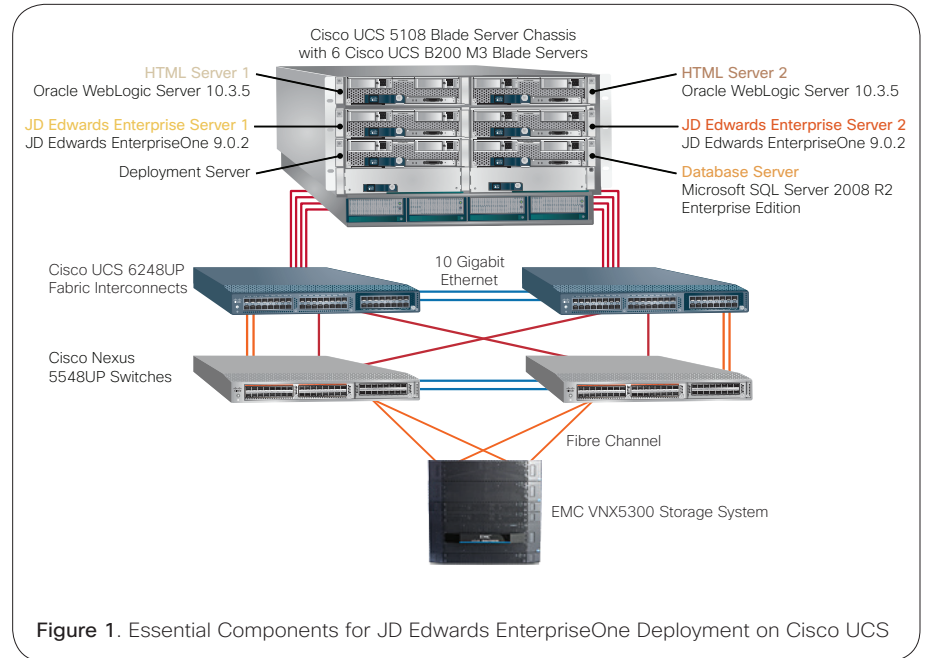
bring a high-bandwidth, low-latency, 10-Gbps unified fabric to each server that carries IP, storage, and management traffic over a single set of cables. The system represents a radical simplification compared to traditional architectures, resulting in lower capital expenditures and operating costs.

Cisco UCS B200 M3 Blade Server

The Cisco UCS B200 M3 is a blade server without compromise. Powered by the Intel Xeon processor E5 family, the half-width blade server offers 24 DIMM slots (up to 768 GB total capacity when equipped with 32-GB DIMMs) to support large virtual machine footprints. It is the first blade server anywhere to provide built-in programmable I/O connectivity, delivering the utmost in I/O bandwidth and flexibility.

Cisco UCS 6248UP 48-Port Fabric Interconnect

Typically deployed in redundant pairs, the Cisco UCS 6248UP fabric interconnect provides uniform access to networks and storage. With up to 48 ports in one rack unit (1RU), including an expansion module with 16 unified ports, the Cisco UCS 6248UP fabric interconnect offers high port density, reduced port-to-port latency, and centralized unified management with Cisco UCS Manager.

Cisco Nexus 5548UP Switch

The Cisco Nexus 5548UP Switch provides a unified converged fabric over 10 Gigabit Ethernet for LAN, SAN, and cluster traffic. This unification enables network consolidation and greater utilization of previously separate

infrastructure and cabling, reducing by up to 50 percent the number of adapters and cables required, eliminating the need for separate infrastructure.

EMC VNX Series Unified Storage

Designed with simplicity in mind, the EMC VNX family of storage systems combines powerful and flexible hardware with advanced efficiency, management, and protection software to meet the stringent demands of ERP deployments. Designed to take advantage of the latest innovation in flash-drive technology, EMC VNX arrays increase performance and efficiency while reducing the cost per gigabyte.

Test Methodology

Run in a Cisco® Oracle Competency Center, the benchmark consisted of 17 scripts that initiate transactions to simulate 500 to 15,000 concurrent users accessing several JD Edwards EnterpriseOne FMS (20 percent), SRM

(24 percent), SCM (49 percent), CRM (5 percent), and HCM (2 percent) transactions to simulate conditions that are typical of JD Edwards EnterpriseOne application deployments. All components were monitored through the Microsoft Windows Performance Monitor tool.
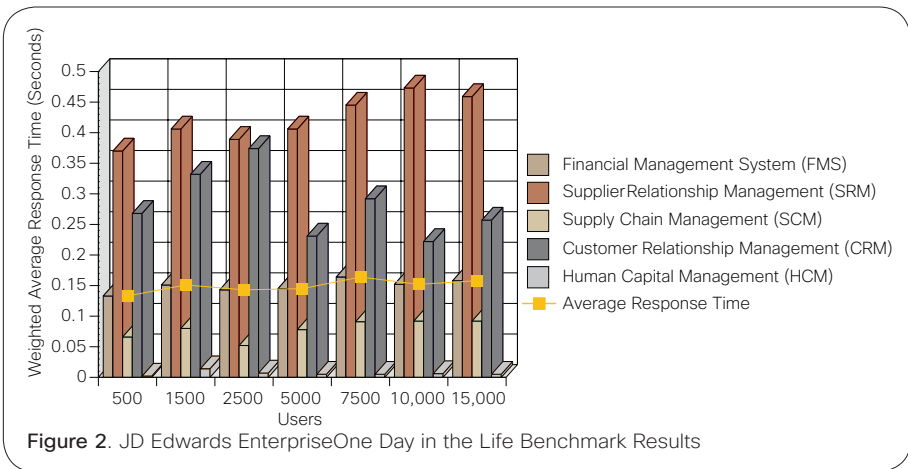
Benchmark Results

User response time was captured at a LoadRunner Controller for all 17 interactive scripts. As shown in Figure 2, Cisco UCS B200 M3 Blade Servers delivered fast response times on the JD Edwards EnterpriseOne DIL benchmark, with a weighted average response time of less than 0.2 second even as the number of users scaled from 500 to 15,000 users.

Demonstrating the Cisco UCS platform's ability to deliver fast processing, CPU utilization rates on the blade servers were low, with most JD Edwards EnterpriseOne software
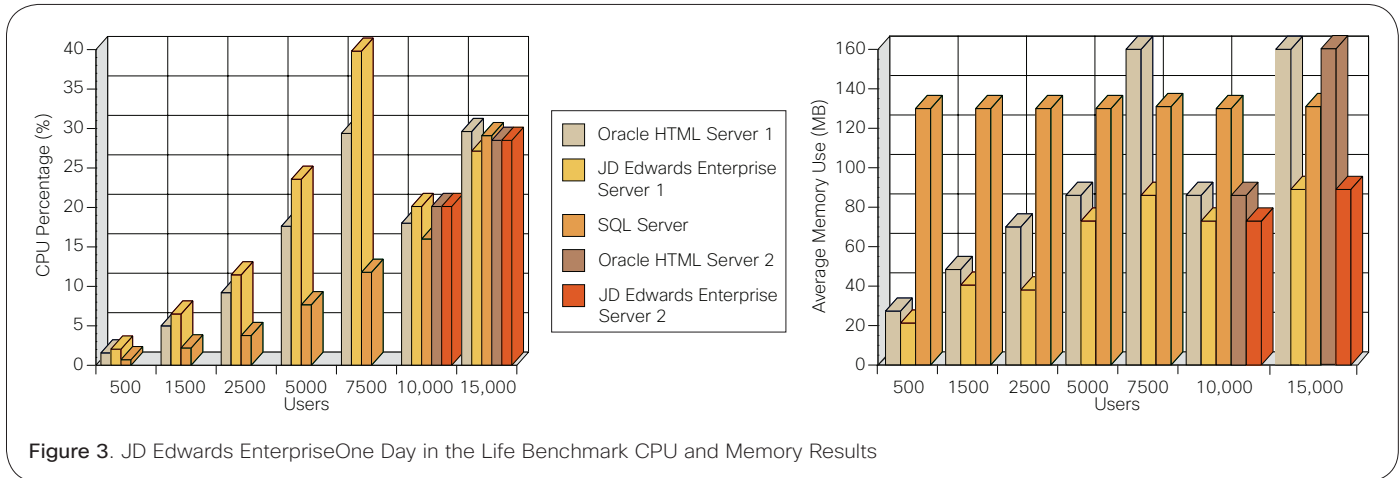
components using less than 20 percent of CPU resources. As the workload scaled to 15,000 users, CPU utilization rose to approximately 30 percent, reflecting the linear scalability of the workload and completing all transactions quickly with significant headroom for growth.

In addition to CPU utilization, memory utilization is illustrated in Figure 3. Memory utilization on the HTML server depended on the number of Oracle WebLogic Server instances configured with various workloads. For lower user loads, the enterprise server configuration was set so that memory scaled linearly. As additional user loads were introduced, the configuration was further optimized through kernel processes to provide ample memory for additional JD Edwards EnterpriseOne processes.

The EMC VNX5300 storage system was configured as the storage for all tiers of the JD Edwards EnterpriseOne software (HTML server, enterprise server, and database server). As shown in Figure 4, the number of I/O operations per second (IOPS) on the database server scaled linearly, reflecting the gradual increase in user count as the number of users grew from 500 to 15,000 users. The IOPS count on the HTML server and enterprise server was low.

Figure 2. JD Edwards EnterpriseOne Day in the Life Benchmark Results

Figure 3. JD Edwards EnterpriseOne Day in the Life Benchmark CPU and Memory Results

Delivering Landscape and Performance Optimization

Deployment of Cisco UCS enables data centers to reap the benefits of a simplified infrastructure. By consolidating JD Edwards EnterpriseOne applications onto Cisco UCS, IT departments can support more ERP users while reducing the complexity of the entire data center. Benchmark results show that the Cisco UCS B200 M3 Blade Server delivers excellent scalability to JD Edwards ERP applications. Many users can be supported with little hardware—up to 15,000 in the test configuration—and still deliver accelerated response times. IT departments can scale deployments further with larger servers, or add servers for scale-out deployments.

Cisco UCS delivers this outstanding scalability at a compelling price point. The fast response time, scalability to 20 chassis, and embedded management capabilities of Cisco UCS enable IT departments to scale their ERP application deployments without added complexity or excessive cost. For organizations assessing infrastructure, benchmark results demonstrate Cisco's commitment to the delivery of systems that run Oracle's JD Edwards EnterpriseOne software best.

For More Information

· For more detailed information about the benchmark testing conducted, please visit http://www.cisco.com/en/US/docs/unified_computing/ucs/UCS_CVDs/ucs_jde_emc.html#wp387028.

Figure 4. JD Edwards EnterpriseOne Day in the Life Benchmark IOPS Results
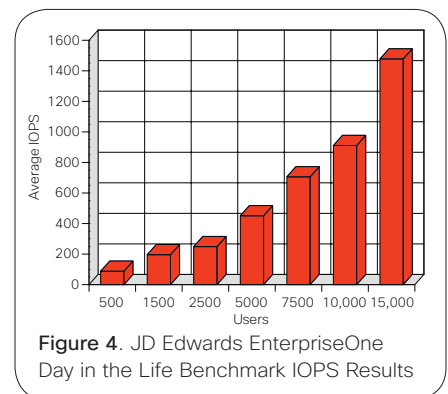
· For more information about Cisco UCS servers, please visit http://www.cisco.com/go/ucs.

· For more information about Cisco UCS performance, please visit http://www.cisco.com/go/ucsatwork.