Cisco UCS B200 M2 Blade Server: Best Cloud Computing Performance of Any 2-Socket Blade Server

Highlights

World-Record-Setting Results

• The Cisco® UCS B200 M2 Blade Server delivers a VMware® VMmark™ 2.1 score of 7.17, outperforming all other 2-socket blade servers and delivering 4.5 percent more virtualization capacity than HP's 2-socket ProLiant BL490c G7 server.

Simplicity Increases Performance

• The Cisco Unified Computing System's radically simplified design eliminates a significant number of components, enabling the system to host some of the most powerful Intel® Xeon® processors available today, while speeding network traffic directly from virtual machines to the system's single pair of fabric interconnects.

Better Performance for Your Workloads

• Whether you are implementing a virtualized data center or a public or private cloud, these VMware VMmark 2.1 benchmark results indicate the degree to which the Cisco Unified Computing System™ can speed up your applications.

The Cisco® UCS B200 M2 server delivers the best cloud computing performance of any 2-socket blade server as measured by the VMware® VMmark™ 2.1 benchmark. Powered by technology available only with the Cisco Unified Computing System, this result demonstrates Cisco's continued industry leadership.

In only two years, the Cisco Unified Computing System™ has captured more than 30 world records for performance. Cisco's score of 7.17@7 tiles on the VMware VMmark benchmark compares server virtualization performance, and also the infrastructure performance and agility that is required for cloud computing environments—including how well a system's servers, network, and storage support virtual machine movement, storage migration, and virtual machine provisioning. The Cisco Unified Computing System is optimized for server virtualization, one of the reasons why Cisco beat the HP ProLiant BL490c G7 server result of 6.86@7 tiles.

Simplicity Increases Performance

The Cisco Unified Computing System is an integrated system that is entirely programmable through unified, model-based management to simplify deployment of enterprise-class applications and servers running in bare-metal, virtualized, and cloud computing environments. In stark contrast to traditional rack-in-a-box blade systems, the Cisco Unified Computing System is designed for simplicity, a design that delivers better performance. Cisco fabric extender technology connects the system's unified fabric from the system's single pair of fabric interconnects directly to servers and individual virtual machines. This radical simplicity increases network throughput and eliminates the multiple switching, I/O, and management modules that clutter traditional systems and raise their cost.

With fewer devices and cables blocking the rear of the chassis, the system has an elegant, efficient, straight-through airflow that allows it to support some of the most powerful Intel® Xeon® processors available. While not every customer will choose the highest-performing processors for their servers, the capability of the Cisco Unified Computing System to support a wide range of processors with different power consumption characteristics is an indication of the investment protection the platform offers.

VMware VMmark 2.1 Benchmark

The VMmark 2.1 benchmark uses a tiled design that incorporates six real-world workloads to determine a virtualization score. Then it factors VMware vMotion,

Figure 1. VMware VMmark 2.1 Test Configuration
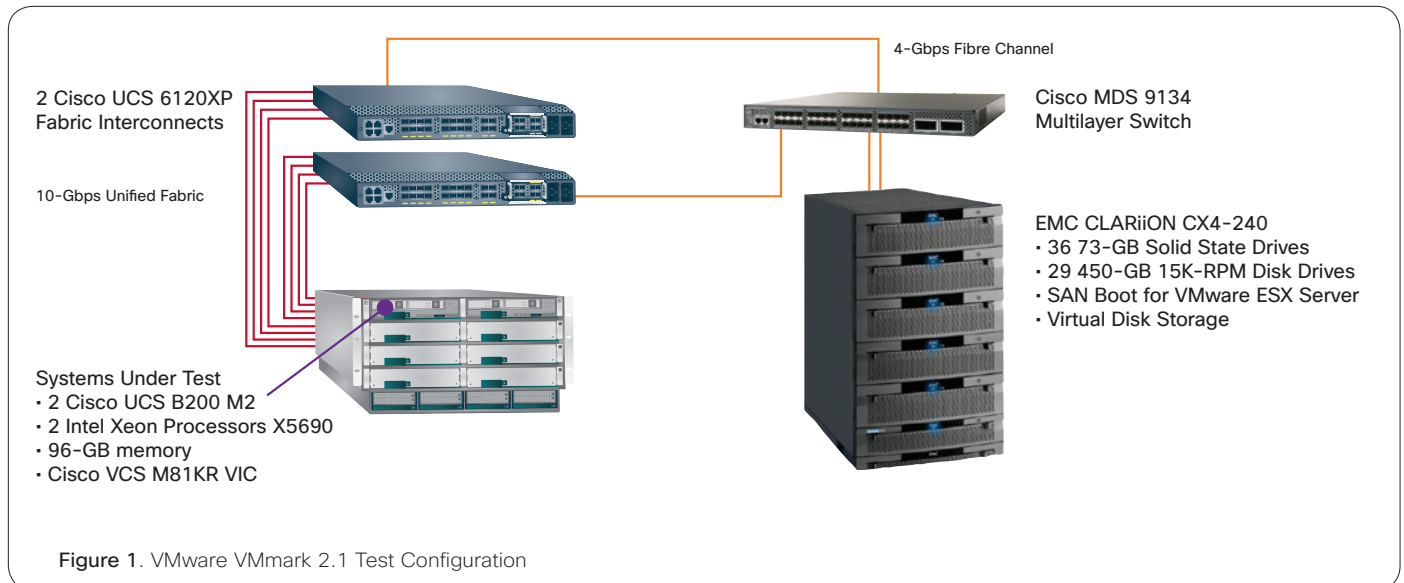
Storage vMotion, and virtual machine provisioning times to determine an infrastructure score. The combination of these scores is the total benchmark score. Because the Cisco Unified Computing System is an integrated system, it delivers both virtualization and infrastructure performance. Because the system virtualizes the hardware, it offers greater flexibility to run any workload on any server, much as cloud computing environments support virtual machine images.

Cisco UCS B200 M2 Blade Server Benchmark Results

Cisco achieved a VMmark 2.1 benchmark score of 7.17@7 tiles using two Cisco UCS B200 M2 Blade Servers (Figure 1), each powered by two 6-core Intel Xeon X5690 processors. Intel Turbo Boost Technology was

enabled to raise the clock speed from 3.46 GHz to up to 3.73 GHz as conditions permit. Each system was configured with 96 GB of main memory and a Cisco UCS M81KR Virtual Interface Card (VIC). The VIC acts as an adapter fabric extender, bringing the system's fabric interconnect ports directly to the VMware vSphere hypervisor and virtual machines.

Cisco Virtual Interface Cards
The Cisco UCS M81KR is a mezzanine-format adapter whose number and type of I/O devices can be programmed on demand by the system's unified, model-based management. The card can support up to 128 devices including 10 Gigabit Ethernet network interface cards (NICs) and Fibre Channel host-bus adapters (HBAs). The card's devices can connect ports from the system's fabric interconnect directly

to virtual machines without requiring the multiple layers of switching used by traditional systems.

Some of the card's devices were used to support the hypervisor itself: two Fibre Channel HBAs connected the hypervisor to the EMC CLARiiON storage used to store virtual machine images. Separate Ethernet NICs were dedicated to support VMware vmkernel and vMotion traffic.

Cisco Virtual Machine Fabric Extender (VM-FEX) technology was used to connect 35 of the card's NICs directly to virtual machines, increasing performance by moving switching to the fabric interconnects and freeing the host CPU to deliver greater application performance. Speeding up infrastructure activities, the system transfers virtual NICs when VMware

VMotion moves virtual machines between servers.

EMC CLARiiON Storage

Cisco's configuration took advantage of the performance of an EMC® CLARiiON® CX4 Model 240, a powerful networked storage system that transparently scales to up to 231 terabytes (TB) of capacity. The system provides five 9s availability, Fully Automated Storage Tiering (FAST), and FAST cache, which help increase the performance of virtualized environments. The system used in Cisco's testing used 36 73-GB solid-state drives and 29 450-GB 15K-RPM disk drives. The EMC CLARiiON storage was used for SAN boot of VMware ESX Server and virtual disk storage.

Conclusion

Cisco's simplified approach delivers greater performance through efficient power and cooling that can support some of the most powerful CPUs available anywhere. Cisco's simplified approach to networking delivers the throughput of 10 Gigabit Ethernet directly to individual machines, offloading the host CPU and freeing cycles to deliver better application performance. Cisco's benchmark results demonstrate the architectural advantages of a system built for virtualized environments, and they provide customers with a measure of what they can expect when deploying the Cisco Unified Computing System.

For More Information

Visit http://www.cisco.com/go/ucs.

Disclosure

VMware VMmark is a product of VMware, Inc. The results cited in this document were made available at http://www.vmmark.com as of March 22, 2011.

CISCO