CASE STUDY
Intel® Xeon® processor 5500 and 5600 series
Enterprise Server
Cloud Computing
Virtualization: Dynamic Resource Management

Design Automation Takes to the Cloud

QLogic triples performance of electronic design automation (EDA) software with Intel® Xeon® processor 5500 series

From Ethernet adapters to stackable Fibre Channel* switches, QLogic develops industry-leading solutions for the next-generation data center. QLogic uses Intel® processor technologies in its own data center to deliver on-demand computing capacity that helps the company speed its breakthroughs to the marketplace. QLogic says its internal engineering cloud, powered by the Intel® Xeon® processor 5500 series, delivers triple the performance of its previous grid while cutting costs and increasing availability. Development groups are using the Intel® Xeon® processor 5600 series for next-generation testing.

QLOGIC®
The Ultimate in Performance

"The Intel® Xeon® processors helped us achieve a quantum performance upgrade for our application-specific integrated circuit (ASIC) computing environment, which gives us quicker simulations and reduced time to the marketplace."

– Mark Dargitz
Director, IT Infrastructure
QLogic

CHALLENGE

- **Aging virtual infrastructure.** QLogic was an innovator in virtualizing its mission-critical engineering environment ahead of less strategic applications. But as its engineering grid aged, performance began to lag, and a single job (or simulation) could vary by an average of 28 percent from one run to the next.

SOLUTIONS

- **HP ProLiant* BL460c G6 blades with the Intel Xeon processor 5500 series.** QLogic chose this solution after its head-to-head comparisons showed the Intel Xeon processor 5500 series outperformed an alternative processor in the same platform on all six key metrics,[1] including running CPU-bound applications nearly twice as fast.
- **Intel Xeon processor 5600 series to drive faster data networks.** Lab groups are introducing the Intel Xeon processor 5600 series for tasks such as performance testing of products under development.

IMPACT

- **Triple the performance.** QLogic says its CPU-bound applications run almost three times faster on the new cloud than on its earlier grid, and I/O bound applications are twice as fast.
- **25 percent lower cost per grid slot.** The energy efficiency of the Intel® processors helped reduce energy consumption by more than 24 percent. The overall cost per grid slot shrank by 25 percent.
- **Five nines of availability.** Availability has exceeded expectations, rising from 99.5 to 99.999 percent.
- **Accelerated innovation.** With faster results, engineers can run more design simulations, bringing higher-quality products to the marketplace more rapidly.

Leading-Edge IT

Many companies began their use of virtualization with the simplest applications and worked their way toward mission-critical tasks. "QLogic IT is considered leading edge, and we wanted to apply virtualization where we saw the greatest impact for performance," says Mark Dargitz, QLogic's IT director. Three years ago, QLogic virtualized its electronic design automation (EDA) applications, which engineers use to develop the application-specific integrated circuits (ASICs) that give QLogic products their edge. At that time, it chose a non-Intel solution.

The cloud's success creates a stronger partnership between IT and engineering

When QLogic was ready to refresh its virtualized engineering infrastructure, it selected HP ProLiant BL460c GC blade servers and ran side-by-side tests comparing blades configured with the Intel® Xeon® processor 5570 to a comparable non-Intel processor. This time, the decision went to the Intel® architecture.

"In our tests this time, Intel was clearly the leader on performance," Dargitz says. "The Intel processor also did much better at containing the performance variability we were seeing on the older grid. On the older grid, you could run a code twice on the same box and see up to a 28 percent variation in performance. The Intel processor eliminated that, reducing the variation to 1.4 percent."

In addition to the Intel Xeon processor 5500 series processors, the cloud runs Red Hat Enterprise Linux*, with VMware vSphere* ESX 4.0 atop Intel® Virtualization Technology (Intel® VT).[2] Since most of the EDA applications in the cloud are single threaded, IT dedicates resources to each one. Virtualization allows QLogic to take advantage of multi-core performance even on single-threaded applications.

With its internal engineering cloud based on Intel® technologies, Dargitz's IT infrastructure organization empowers the company to continue its advances. "Our approach has improved our IT partnership with product development, and enabled us to build greater confidence with our internal ASIC Engineering teams," he says. "They now engage us on the front end because we have proven our ability to meet their requirements, providing them with the best computing resources in our industry."

Driving Faster Transfers

In QLogic's labs, researchers are using six-core and quad-core versions of the Intel Xeon processor 5600 series to test the company's products and optimize their throughput. For example, engineers used the Intel® Xeon® processor 5670 to test QLogic's Quad Data Rate (QDR) InfiniBand* product.

"The architectural improvements, higher core counts, and larger and faster memory in the latest-generation CPU enabled us to double the transfer rate, going from 20 Gbps on DDR2 to 40 Gbps on the QDR," said Joe Kimpler, director of technical alliances at QLogic. "This will allow for faster file transfers over cost-effective, high-performance networks and enable high-performance clusters to keep pace with advancing CPU performance."

SPOTLIGHT ON QLOGIC

QLogic is a global leader and technology innovator in high-performance networking including adapters, switches, and ASICs. QLogic data, storage, and server networking solutions are incorporated into products from companies including Cisco, Dell, EMC, HP, Hitachi Data Systems, IBM, NetApp, Oracle, and others. Founded in 1994, QLogic is based in Aliso Viejo, California. A NASDAQ Global Select company, QLogic is included in the S&P 500.

Virtualization: Dynamic resource management: Optimize server utilization and increase agility through virtualization and dynamic policy-based resource management.

Find a solution that is right for your organization. Contact your Intel representative or visit the Reference Room at **www.intel.com/references.**

1. I/O-bound performance, CPU-bound performance, average Register Transfer Level (RTL) full-chip simulation, RTL variability, average netlist gate-level simulation, and netlist variability.

2. Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain computer system software enabled for it. Functionality, performance, or other benefits will vary depending on hardware and software configurations and may require a BIOS update. Software applications may not be compatible with all operating systems. Please check with your application vendor.

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