

Doubling the Value of Virtualization with HP ProLiant G6 Servers and HP StorageWorks

Upgrade at Opus Interactive to enable up to 29 times more servers per rack at half the power of rack-mounted servers



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Objective

Provide customers with a cost-efficient, highly available pay-as-you-grow server and storage model

Approach

Offer virtualized servers and storage using HP ProLiant server blades, the HP LeftHand P4000 SAN, and VMware

Projected business benefits

- 75% reduction in customer cost per server (\$600 USD per month reduced to \$150)
- High availability offered at no extra cost
- Twice as many virtual machines per host enabled by G6 server without power increase
- 29 times more servers per rack at half the power (virtualization with blades vs. rack-mounted/standalone)

Projected IT improvements

- Four times faster time to value (server deployment in one hour vs. four hours)
- 10-fold boost in CPU utilization (50–75%, up from less than 5%)
- 95% of server administration carried out remotely
- Two to six hours per month of downtime avoided through SAN changes on the fly



HP customer case study: HP ProLiant G6 server, server virtualization

Industry: technology

If you were adding managed servers and storage to your business, how would you want to buy the technology?

1. Forecast the capacity you might need in the future. Buy it now. Hope you grow into it.
2. Buy only the capacity you need now. Add as you grow, and pay for what you add when you add it.

Of course, you’d want the second choice, and you’re not alone. Portland, Oregon-based Opus Interactive, a managed services provider, has been able to offer the pay-as-you-grow managed server and storage model over the past four years using virtualization on the HP BladeSystem and HP LeftHand P4000 SAN. As a result, the company has seen its customer base expand by 50%.

“I would have had to take down a Fibre Channel SAN twice a month in the middle of the night to make the kind of changes we make now on the HP LeftHand SAN in the middle of the day on the fly.”

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“I’d say over half of the new customers we’ve gained are with us because of virtualization and the HP BladeSystem,” explains Jeremy Sherwood, vice president of sales and operations at Opus Interactive. “Without them, we wouldn’t have been able to pick up that level of business.”

Now, by upgrading to HP ProLiant G6 server blades and HP LeftHand SAN, Opus Interactive expects to as much as double some key benefits of virtualization. Which benefits, and how? To understand the gains made possible by the G6 server, it’s useful to look at the big picture of gains made at Opus Interactive through server and storage virtualization on HP technology.

Four years ago, explains Sherwood: “Many of our customers were on the traditional pizza-box rack-and-stack servers, and few of them ever utilized the true performance of those servers. We wanted to save our customers from paying for unnecessary resources, and make our own investment in infrastructure more cost-efficient. Virtualization on the HP BladeSystem and HP LeftHand SAN enabled us to move in that direction swiftly.”

Broad overall benefits

In the three years since Opus Interactive began offering virtualized servers on HP ProLiant c-Class server blades, 75% of Opus Interactive’s customers have chosen this offering. There are many reasons:

CPU utilization jumps 10-fold, from under 5% on rack-mounted servers to 50–75% on servers hosting virtual machines (VMs). This is a foundation of cost-efficiency for the gains that follow.

High availability at no extra cost. In the past, a customer who wanted a highly available application would purchase multiple physical servers and clustering software. That often meant having standby servers that sat idle, consuming power and cooling.

Notes Sherwood: “Just by being in our virtualized environment, customers get disaster recovery by default, whereas in the past they’d have to pay for it. We have servers on standby in case of failures, and we can hot-swap virtual machines between them. We can lose a whole tier of infrastructure and the customer never knows we moved them over.”

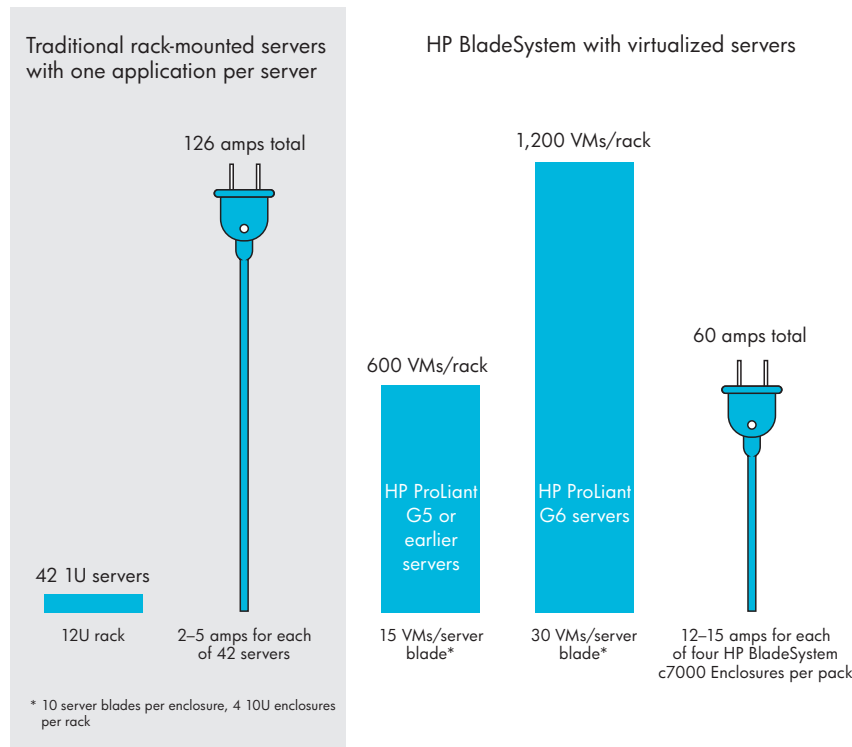
Servers for 75% less. Because of increased efficiency, charges are lower. “In the old model, customers would pay roughly \$600 [USD] a month for a fairly robust dedicated server, and they were likely to need only one or two percent of that resource,” Sherwood says. “Now they can get exactly the server and storage resources they need at about \$99 or \$150 a month—75% less. They’d need to buy eight \$600 servers to have the redundancy we’ve built into our virtual cluster for that \$150 server—that’s a monthly cost of \$4,800 reduced to \$150.”

Load balancing included. What’s more, the Opus team can use the Distributed Resource Scheduling (DRS) capability of VMware to add CPUs when a customer’s application needs more processing power. Explains Sherwood: “We have a data center in Portland and one in Texas with active-active load balancing between them. For what customers would normally pay to have disaster recovery, they can have much more than disaster recovery—a full, global load-balanced solution.”

More protection built in to hardware. Notes Sherwood: “Another big advantage is that because of the HP BladeSystem c7000 Enclosure, customers are protected by redundant power supplies, fans, and fiber connections. And the cost to replicate those features in rack-and-stack servers would in some circumstances double the cost of the server itself.”

Four times faster time to value. When customers need a virtualized server, Opus Interactive can stand one up in an hour. “Deploying a rack-mounted server takes four hours—IF we happen to have the right model in stock,” Sherwood explains. “With virtualization, I get them up and running in an hour and away they go.”

Figure 1. A tale of two racks at Opus Interactive



29 times more servers using half the power. The biggest gain for Opus Interactive is in the scalability of its data center. See Figure 1: the company projects it can host up to 29 times more servers per rack compared to the one application per rack-mounted server model—at half the power consumption.

The IT team was surprised by the power efficiency of the HP BladeSystem. “It’s one thing to read marketing fluff and say, ‘Sure, this is going to save me whatever,’” Sherwood recalls. “But when we actually plugged the HP BladeSystem c7000 Enclosure in, loaded it up, and put the rubber to the road, we said ‘Oh, wow. We’re running this chassis at full tilt, and it’s drawing only 12 to 15 amps of power. That’s absolutely amazing.’ Ever since, this is the only kind of server we’ve bought.”

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HP G6 server doubles VMs per host

The ability to host up to 1,200 servers per rack at Opus Interactive is based on the performance of the HP ProLiant BL460c G6 server blade, which the Opus team recently tested. Notes Sherwood: “With the new HP ProLiant G6 and HP LeftHand SAN, I’m able to in many cases double or even quadruple the amount of virtual machines I can put on an individual blade, just because of the architecture improvements—without increasing power consumption. We can now host 30 to 35 VMs per server blade.”

The key difference is the higher memory capacity and network throughput designed into the G6’s Intel® Xeon® 5500 series processor, Sherwood explains. “The downside in the past was the direct parallel between processing power and RAM consumption. If you increase one, you need to increase the other; otherwise, you can’t really utilize the benefit. And one of the things that we noticed with the G6 is the additional RAM slots go hand-in-hand with the increased processor performance. We appreciate the functionality Intel has added to the processor. That’s what lets us add more VMs per node.”

About Opus Interactive

Portland, Oregon-based Opus Interactive (www.opusinteractive.com) is a managed services provider (MSP) that offers managed hosting, dedicated virtual and standard servers and storage, co-location, and high-capacity Internet services. With a unique high-density micro data center model, advanced technology adoption, clean power utilization, and energy-efficient hosting solutions, Opus Interactive helps organizations lower their IT costs and footprint.

The result is that Opus Interactive now has an easy way to extend the life of its data center, says Sherwood: "We've already invested in the HP BladeSystem c7000 Enclosures. Now we can go with the HP ProLiant G6 server and upgrade individual blades themselves. We can double the number of customers we serve without increasing power or cooling—just by upgrading the HP server blades."

Processing is also faster, Sherwood adds: "We simulated a Web server running a substantial amount of SQL transactions and many users connecting to it at the same time. We wanted to see how well the processors and the servers would respond to a heavy load in comparison to traditional processors. And it was easily double the amount of concurrent connections, double the load, and a faster response. The G6 is a perfect fit for us for many reasons. It's a beautiful investment."

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Remote management means flexibility

Another feature that helps keep costs down is HP BladeSystem remote management.

"Because of HP Insight Control suite, our staff can do 95% of our server administration remotely, without going into the icebox of the data center," Sherwood explains. "Whether our engineers are at home or at their desks, they can reboot a machine. They can look over servers and see what needs to be patched. They can troubleshoot. They can get firmware upgrades done in less than half the time."

Reducing storage costs with HP LeftHand P4000 SAN

Storage should be just like servers, Sherwood says, in that customers should be able to pay as they grow and not have to forecast growth and buy now for the future.

Solution at a glance

Hardware

- HP ProLiant BL460c G6 server blades
- HP BladeSystem c7000 Enclosures
- HP LeftHand P4000 SAN

Software

- VMware Virtual Infrastructure 3
- Microsoft® Windows® Server 2008 operating system

Operating system

- VMware ESX 3.5

Network protocol

- 1 Gigabit Ethernet

This is possible because Opus Interactive chose an HP LeftHand P4000 SAN three and a half years ago. "VMware, the HP BladeSystem, and the HP LeftHand P4000 SAN are the perfect marriage in a build-as-you-grow platform," Sherwood explains.

The ability of the HP LeftHand SAN to connect over iSCSI is important, Sherwood adds. "I don't have to have Fibre Channel cards for everything," he says. "The HP LeftHand SAN reduces complexity compared to a Fibre Channel SAN."

Capacity can be added or changes made without downtime, he adds. "I would have had to take down a Fibre Channel SAN—and our entire infrastructure—twice a month for one to six hours in the middle of the night to make the kind of changes we make now on the HP LeftHand SAN in the middle of the day on the fly."

HP is a key partner for Opus Interactive, Sherwood sums up. "HP is forward thinking in anticipating what we're looking for from a business standpoint and service provider standpoint. And HP keeps delivering leading-edge technologies for us," he says.



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