

A new level of virtual flexibility from Terremark, HP, VMware, and AMD

Configure a new, hosted virtual environment in minutes, on demand, with no capital outlay—powered by HP ProLiant servers



“We manage all our data centers basically lights out. We leverage HP heavily for this. We’ve reduced server visits by 90 percent, and that saves thousands of dollars a month.”

Jason Lochhead, chief technology officer, Hosting Services, Terremark

HP customer case study: Terremark

Industry: technology

Objective

Provide customers with on-demand virtual IT environments requiring no capital investment

Approach

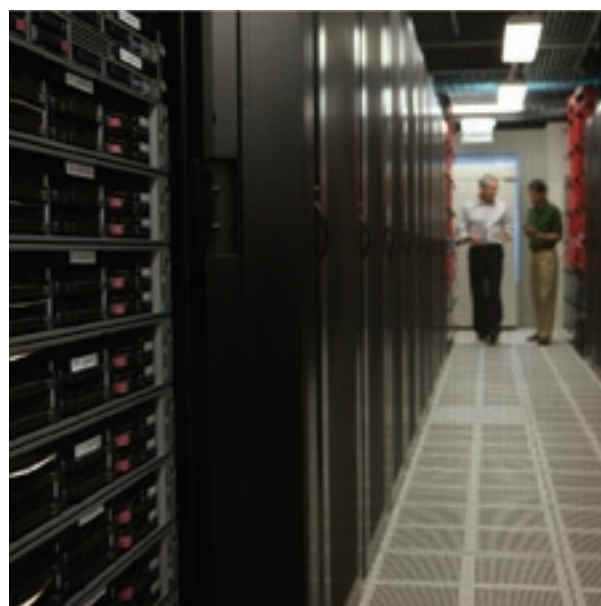
Build a new platform with custom operations software, VMware, and HP ProLiant servers with AMD Opteron™ processors

Business benefits

- Capital-free deployment of an entire virtual environment on demand
- Savings of thousands of dollars a month due to 90 percent reduction in server visits
- More than 50 percent reduction in memory costs with HP ProLiant architecture
- Faster time to value with server deployment in minutes instead of weeks

IT improvements

- Two-point increase in availability (97 vs. 99 percent) from virtualization
- Fourfold increase in memory bandwidth from AMD’s Direct Connect Architecture with on-die memory controllers
- Fourfold increase in server utilization (70 to 80 percent vs. 15 to 20 percent)



Everyone wants the benefits of a good infrastructure—ideally without having to house it or maintain it.

That’s why there are IT infrastructure service providers, and Terremark is one of them. With data centers in the United States, Europe, and Latin America and roots going back more than a decade, Terremark has become a leader in providing capacity on demand.

Now, as virtualization transforms data centers, Terremark is using the new technology to develop new and better choices for its customers.

“We were looking to provide customers with capital-free hosting,” says Jason Lochhead, chief technology officer for Hosting Services at Terremark. “Traditionally, customers own the hosted servers.”

“With AMD Opteron™ processors, you effectively get four times the memory bandwidth over a single-socket box or a processor that doesn’t have an on-die memory controller.”

Jason Lochhead, chief technology officer,
Hosting Services, Terremark

About Terremark

Terremark Worldwide is a leading global provider of IT infrastructure services delivered on the industry’s most robust and advanced operations platform. Leveraging purpose-built data centers in the United States, Europe, and Latin America and access to massive network connectivity from more than 160 global carriers, Terremark delivers a comprehensive suite of managed solutions, including managed hosting, collocation, network, and security services.

At last, no money down

The problem was that customers often had to buy capacity they didn’t need. As Terremark’s Web site points out, infrastructure is meant to drive the business forward, but it can become a logistical and financial quagmire instead. Servers dedicated to a single application are often underutilized and difficult to scale or upgrade.

“We wanted to provide utility computing capacity to customers without having to go and purchase dedicated servers for them,” Lochhead notes.

That became possible in 2005 when Terremark launched Infinistructure™, a massive, enterprise-class computing grid portioned into secure virtual servers. “Virtualization became practical when dual-core processors started to ship from AMD,” Lochhead observes. “You suddenly had a doubling of CPU capability without a doubling of cost. It became cost-effective to roll these servers out with a lot of RAM in them and divide them into virtual machines for multiple customers.”

What’s critical is the right design. Terremark launched Infinistructure using VMware on HP ProLiant DL385 Servers with AMD Opteron™ processors. “We got our VMware from HP bundled with the servers,” Lochhead says. “That made it a simple purchase and a simple support model, because support comes from HP as well.”

Why HP?

Terremark started with Compaq in the 1990s and is still an HP customer now, long after Compaq’s merger with HP.



Notes Lochhead: “We’ve evaluated other brands of servers as part of ongoing due diligence, but we find the engineering on HP servers is superior to the other models we’ve looked at—not only in design, but in quality of manufacturing. We notice how easy it is to rack the HP servers or add cards or memory. We notice how well they’re made.”

Reducing data center visits by 90 percent

Another key advantage is HP remote management. Terremark drives thousands of servers worldwide using its own custom software called digitalOps, which links with tools such as HP Insight Manager, HP iLO (Integrated Lights-Out), and HP SiteScope for a centralized view of the entire infrastructure.

“We mainly use HP Systems Insight Manager and HP iLO for watching the hardware, detecting a potential drive failure or broken fan so we can take corrective action early,” says Lochhead. “We might have 10 to 20 virtual machines on a single server, so we want to use tools such as VMotion to quickly clear off VMs, fix the server, and return the VMs without interrupting service.”

The idea is to stay remote. “We manage all our data centers basically lights out,” Lochhead says. “We leverage HP heavily for its remote management. I know HP was one of the first vendors to actually have a really good lights-out capability with the iLO integration. We have some people at each data center to rack servers and troubleshoot things. But building servers and managing servers in our data centers—whether they’re in California, Texas, or Florida—is done remotely from Dallas. We’ve reduced server visits by 90 percent, and that saves thousands of dollars a month.”

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AMD memory: half the cost, four times the bandwidth

Another important choice for Terremark is the processor and chipset in its servers. “Early on, we imagined good virtualization performance depended on the processor, but it really turns out to be about memory,” Lochhead explains.

The HP ProLiant DL585 server has 32 DIMM sockets in it, offering an advantage. “You can get a very high density of memory without having to go with expensive DIMMs,” Lochhead adds. “We’re able to get enough memory in those boxes to run as many VMs as we would like without using often more expensive 4 GB DIMMs.”

Costs drop by more than 50 percent, Lochhead points out. “4 GB DIMMs are much more than two times the cost of 2 GB DIMMs. Equip a server with 4 GB DIMMs and you’ll quickly find that the memory costs more than the rest of the server.”

Terremark calls on another design advantage. “Especially with so many different VMs and so many different workloads, it’s important that with AMD Opteron™, each processor has its own on-die memory controller,” Lochhead notes. “Therefore you effectively get four times the memory bandwidth you would get over a single-socket box or a processor that doesn’t have an on-die memory controller.”

Customers gain power, lose wait

The result for customers is infrastructure on demand, with a flat monthly fee and no capital outlay. “That’s helpful to a startup,” Lochhead notes, “and to anyone who isn’t sure how much hardware to buy. With no procurement process, you can add a server in minutes instead of weeks.”

Customers get more flexibility, faster time to value, and higher availability—Terremark’s service-level agreement on availability for a standalone server is 97 percent. A virtual server is two points higher at 99 percent.

Cost efficiency increases, too, as server utilization typically jumps fourfold from 15 to 20 percent up to a target of 70 to 80 percent.

Enterprise Cloud: you drive, we do the work

Now a new offering meets another need. “Some customers wanted to leverage our capabilities running VMware and data centers—but they wanted to deploy and manage their own virtual environment and servers,” Lochhead says. The result is a service called Enterprise Cloud.

“Customers can come to us and say ‘I need 20 GHz of processor, and 40 GB of RAM, and 1 TB of storage,’ and we can make those resources available to them,” Lochhead explains. “They can begin to deploy servers using those resources however they see fit.”

Terremark provides the hardware, the virtualization layer, the network, the storage, and all the pieces needed for a virtual infrastructure. The customer pays a flat monthly fee and drives the entire virtualization environment themselves.

"The amount of flexibility a customer has increases dramatically when you push out control to them with Enterprise Cloud," Lochhead notes. "Customers could already deploy a server faster with us before. But with Enterprise Cloud, they don't have to put in a request to us or sign a contract for a new server. They can literally have it up and running in under 10 minutes. They can make changes without going through our change management process or waiting for our maintenance window."

The Enterprise Cloud console lets customers select from preconfigured server templates across Microsoft Windows, Linux, and Solaris operating systems—or create their own custom configurations from a simple Web-based interface at the click of a button.

"It's a new level of flexibility—you can have the perfect lineup of resources without having to own them," Lochhead sums up. "Customers can drive without having to deal with what's under the hood—we take care of that. And under our hood are HP ProLiant servers."

Customer solution at a glance

Hardware

- HP ProLiant DL585 G5 Server with four Quad-Core AMD Opteron™ 8300 Series processors
- HP ProLiant DL385 G5 Server with two Quad-Core AMD Opteron 2300 Series processors

Software

- HP Insight Manager
- NetIQ
- HP SiteScope
- digitalOps (custom management software)
- Microsoft Windows Server 2003
- Red Hat Enterprise Linux
- Solaris 10

Operating System

- VMware ESX Server 3.5

HP Services

- HP Service and Support



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