

OrthoTennessee operates more smoothly

Orthopedic surgery practice improves VDI latency and density with Infinio Accelerator

Background

With a 60-year history, OrthoTennessee is a well-respected orthopedic surgery practice. Over time, it has grown to comprise 10 locations in Eastern Tennessee. 55 surgeons provide world-class orthopedic surgery services, while 110 other medical providers provide complementary physical therapy, imaging, and orthotics. Approximately 16,000 patients are seen monthly across the facilities, and OrthoTennessee's clinicians rely heavily on IT to provide high-quality patient care.

Environment

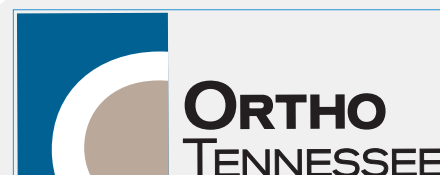
OrthoTennessee's IT organization is centralized, with a team of eight people supporting approximately 30 different systems and technologies. As CIO, Karen Clark leads the organization's strategy for IT, while Michael Barnes, the Operations Supervisor, leads the team's daily operations ensuring the critical systems are available to the organization.

The IT environment is built on Dell PowerEdge rack servers and a Fibre Channel Dell Compellent SAN, which has approximately 40TB of hard drive capacity and has been in operation for 3 years. The clinical providers rely on a variety of healthcare-related applications, including NextGen Healthcare EHR, Fuji Synapse PACS, and SourceMed Vision EHR. In addition, administrative staff members use traditional Microsoft Office applications as well as Great Plains for accounting.

Approximately 100 users were migrated to non-persistent virtual desktops using VMware View to increase the stability of and control over their experience. These virtual desktops were hosted on four ESXi hosts, with storage on the Dell Compellent.

Issues with Maintenance and Downtime

When VDI was initially deployed at OrthoTennessee, it was recommended to the team that they also deploy a complementary technology to improve performance for endusers. They considered a flash tier for their array, but ultimately settled on a software-based solution as it was more cost-effective. Once implemented, the system performed well, but they found that this software solution added a high



COMPANY NAME

OrthoTennessee

INDUSTRY

Healthcare

BENEFITS

- Steady-state response times for VDI cut in half
- Peak response times for VDI reduced by 5X
- Increased virtual desktop density by 60%
- Eliminated the purchase of expensive flash drives

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MICHAEL BARNES,
OPERATIONS SUPERVISOR





degree of complexity into the environment.

Maintenance and upgrades became incredibly difficult, often bringing dozens of users' desktops to a halt. Operations Supervisor Michael Barnes remarked, "If we wanted to do anything, machines were down for hours. If a host went down, it took 1/3 of our VMs with it and we couldn't always get it back immediately." Changing the configuration of the system was also cumbersome, requiring complex calculations and configurations for both memory and disk space.

Evaluating Infinio

Frustrated with the complexity of the solution, CIO Karen Clark sought an alternative. She learned of Infinio Accelerator and suggested that Barnes' team consider it as a replacement. After a discussion with Infinio's technical team, Barnes began a pilot of Infinio.

Barnes was pleasantly surprised with the evaluation process. "The Infinio team let me drive during the installation and initial setup. Most vendors don't do that – it showed the confidence the team has in its product." The installation proceeded with no hitches. "We took a leap and installed right into production, which we don't usually do."

At first, they started with a small pool of just 10 machines, and let it run for two weeks. They saw steady-state latency drop from nearly 7ms to 3ms, and latency spikes up to 20ms reduced 500%. They kept adding users to it slowly, and saw no performance degradation or operational challenges. "Once we realized how smoothly it was going," said Barnes, "we took our current

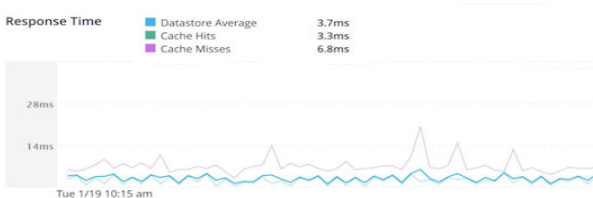
production pool and moved it over to Infinio." As a test, Barnes turned off one of the hosts for some maintenance, and everything kept running smoothly. It was a sharp contrast to the previous solution.

Looking Forward

The full rollout of Infinio into production went seamlessly. Clark says, "We are very pleased with the solution. Making changes, adding a host, these are no longer pain points for us." Several changes to the cache size on individual hosts went smoothly, with the users not seeing any negative impact. Barnes has also stopped worrying about how upgrading one VM might take down all the other VMs. Overall, the ease of use has enabled the team to focus on more strategic projects.

Not only did the team avoid making a significant investment in flash drives for their array, but they are also finding that Infinio is increasing their virtual machine density on the server side. They appreciate the 20% decrease in memory required on each ESXi host. Says Barnes, "I'd estimate we can add 60 additional desktops to the environment without buying any new hardware."

In the future, the OrthoTennessee IT organization plans to increase the number of virtual desktops available to providers. Next up is the Physical Therapy team, where the team is planning a VDI pilot. Says Clark, "Virtual desktops make it easier to deploy applications, make changes, and increase stability. Once our test plan for PT is successful, we'll deploy VDI there next – with Infinio."



Infinio reduced response time for both steady-state operations and latency peaks.

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