Q&A

Saving the VDI user experience

Many companies are looking to realize the promise of virtualization and virtual desktops but face challenges with user expectations around performance. Scott Davis, former CTO of VMware’s storage and end-user computing divisions, has joined Infinio as their Chief Technology Officer. Sheryl Koenigsberg, Director of Product Marketing at Infinio, sat down with Scott to understand his unique insider perspective on virtualization and VDI, and why he thinks Infinio will be a great solution for these environments.

Q: So what’s different about the performance characteristics of a VDI deployment?

A: Well, to start, there is a higher consolidation rate for VDI, so this density complicates things. Not only can the IOPS requirement be high, but they also can be very unpredictable, since it’s all based on what the users are doing on their individual desktops.

And remember, VDI performance isn’t really measured in transactions or throughput, it’s measured in how responsive the desktop is for the user. Without the right latency, it doesn’t matter what kind of IOPS you can drive on the back-end storage. If the users don’t think the desktop responsiveness is acceptable, it’s not.

Q: As a user, I want performance that’s at least as good as my physical laptop was, right?

A: Right. But on the economic side, it’s a different story. Organizations go into VDI projects for the manageability, accessibility, and security of the solution. But at the end of the day they are also looking for a way to get these benefits while still keeping the cost per desktop below that of a physical desktop. That’s hard to do and still deliver adequate performance to large numbers of users. Many times, VDI deployments behave fine during the proof-of-concept, but have inadequate performance in production.

Q: Why are there are so many more writes than reads in these environments. I’ve heard numbers as high as 80% writes. What’s going on architecturally that makes this the case?

A: There are a few things to know here. First, it depends where you are measuring these numbers. In Windows desktops, the NT buffer cache satisfies repeated reads from memory. So there are a lot of reads to commonly accessed files that live in the OS cache and rarely see back-end storage. Similarly, writes aren’t all sent to back-end storage immediately
either — think about how you can lose a Word file if you haven’t hit “Save.” This skews the read/write ratio from each VM as measured at the array.

Q: So the 80/20 writes/reads number might be what the back-end storage sees, but it doesn’t reflect what the desktop is actually doing, correct?

A: Correct. With high consolidation ratios, these considerations are multiplied for each guest VM. Also, RAID technology can turn a single write into multiple writes to different drives for availability.

The other thing at play is that during peak times, those ratios aren’t actually relevant at all. When an array gets backed up and can’t handle the load, all I/Os get backed up. And it’s those peaks that can really bring storage to its knees. Think boot storms, antivirus scans, or updates; all those time-oriented activities. You can see 10x spikes in I/O at those times. Which is why you need to make sure to have storage that is sized for those peaks loads, or something that can handle them.

Q: …like Infinio?

A: Like Infinio. And reads are typically more important for the critical user responsiveness metric. So if we go back to the point about what gets measured in a VDI environment, ultimately it’s how responsive the users perceive the desktops as being.

Q: You have this great background on the virtual desktop industry - do you have any insight as to why nearly half of our customers are using Infinio in a VDI environment?

A: User experience is really crucial to successful VDI deployments. There can be a lot of complexity in delivering the right performance and latency to virtual desktops, and organizations are looking for ways to meet their users’ requirements. The optimizations built into storage arrays have not been very effective in virtualization environments because of the “I/O blender” effect — many VMs issuing I/Os through the hypervisor and thwarting locality optimizations performed by individual guest operating systems.

Q: This conversation has been mostly about why you think customers are choosing Infinio for VDI, but why did you choose Infinio?

A: Well, it wasn’t to join a read-cache company! I think Infinio has great core technology that’s been well-deployed into server-side caching today. Content-based address is a uniquely transparent and non-disruptive form of storage address virtualization. Over the long term, Infinio has the potential to use this technology to provide other services that are transparent and non-disruptive to deploy. I’m here to help build that vision.

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