Lakeland Health: Improving Service Delivery with Cost-Effective, Best-of-Breed VDI



Douglas DeCamp is a Senior Systems Engineer at Lakeland Health, a leading U.S. healthcare system with 5,000 employees, 3 hospitals, 36 community connect practices and 4 walk-in clinics serving Southwest Michigan. Lakeland is implementing a new virtual desktop infrastructure that will increase the productivity of doctors, nurses, and staff by providing mobile access to all Windows applications, including Epic EMR. Even more impressively, Lakeland expects to offer this expanded access to medical resources while reducing desktop delivery costs AND improving IT efficiency. Douglas explains how in this guest blog.

I joined Lakeland Health about two years ago and am really proud to be part of the Lakeland family. The healthcare system is in the nation's top 1% for heart care, has been named a Top 100 Healthcare System by Truven Health Analytics, and is a 2014 Davies Award Winner.

All Roads Lead to Desktop and Application Virtualization

With a computer fleet nearing 5,000 PCs and many of them on the verge of becoming obsolete, our IT team really had our work cut out for us. We didn't really have a computer lifecycle strategy and there wasn't a good plan in place for PC refresh. We were looking at paying close to \$6 million dollars over the next 5 years to maintain our current growth rate. So when I joined Lakeland, one of my main



responsibilities was finding a better, more efficient and lower-cost alternative to buying new PCs. This became one of the biggest drivers for transitioning Lakeland's end user computing environment to virtual desktop infrastructure (VDI).

Additionally, our new home healthcare initiative - which resulted in a 40% increase in the number of doctors, nurses and staff needing mobility - could also be addressed with VDI. Mobile healthcare workers and on-site care providers had started asking us for a "follow the patient" experience. Doctors and nurses want to have a single device with them as they move around between patient rooms, the ER, and their community connect practice. They also want to be able to have a patient's chart open at one location - say, the nursing station - and then be able to walk right into a patient room without having to wait to bring up the chart again. They want to be able to pick up their work wherever they leave off, whether they're at their son's hockey game or reading up on a patient at home before bedtime. Giving care providers this anywhere, anytime access to clinical apps with a unified end user experience is becoming crucial for us in IT.

Security threats are also on the rise. We are seeing new forms of malware pop up daily. Obviously, we don't want to make headlines for the wrong reasons. We need to make sure all of our healthcare, patient and associate data is secure within the boundaries of our datacenter. VDI will meet this need, too, by taking data off of the edge and delivering desktops and apps remotely from the datacenter. Lastly, we were in the final stages of a major move to the <u>Epic Electronic Medical</u> <u>Record (EMR)</u>platform. Providing custom Epic configurations for our many doctors, nurses, and staff - while ensuring they will actually want to use the system! - will be much easier with centrally managed desktops.

Our VDI Technology Selection Process

We are presently running a small VDI pilot in a medical billing office and one of our emergency departments. It is stable, secure, and performs well. We just needed to figure out how to scale it without breaking the bank or adding management overhead. Expanding the small pilot to our entire healthcare system would have been more expensive than buying new PCs, so that wasn't going to work. We needed to find a more cost-effective solution.

To reduce risk with our selection process, we talked with many other healthcare systems to learn from their experiences, asking them questions like:

- Why were they successful?
- What would they change if they could do it over again?
- Who did they consult with?
- What products did they use?
- What was their implementation process?
- How did they stay on budget?
- How did they ensure operational efficiency?

• How did they get their clinical users to buy-in?

Altogether, I think we talked with 20 different healthcare systems. In nearly every case, we heard the same 2 products come up over and over: Imprivata and Unidesk.

Imprivata - User Authentication & Access



We had already implemented <u>Imprivata</u> OneSign on some of our physical PCs, and doctors, clinicians as well as IT are all extremely satisfied with the solution. Given Imprivata's proven Single Sign-On capabilities, support for Epic EMR, and wide acceptance in the other health systems that we consulted, we didn't have to spend a lot of time on this decision.

Doctors find the SSO experience to be absolutely amazing versus having to type in their username and password and wait for their persona to load. The amount of time saved by just tapping their badges to gain access makes all of the doctors as well as the rest of the associates want it. We are now in the process of deploying Imprivata for our virtual desktops. Our clinicians can't wait to be able to tap their badges on any endpoint device and pick up their work right where they left off.

Unidesk - Application & Image Management



<u>Unidesk</u> was newer to us. We had heard about<u>application layering</u> technology and read that it was a better and more successful way of virtualizing apps because it captures them as virtual disks and then attaches them to VMs. However, since this approach is more for fully virtualized datacenters and the cloud, and since we were still on physical PCs, we hadn't had the opportunity to actually test it and work with it.

After hearing Unidesk come up so often in the other successful healthcare VDI deployments, we knew we had to test it out. We ran it in-house on some VDI test systems and it worked as advertised. We could package any application as a virtual disk "layer" - even lower level apps and complicated apps like Dragon Medical, Imprivata, and our Epic EMR system. Knowing apps will ultimately determine the success of the project, and with a few hundred apps to manage at Lakeland, it didn't take us long to decide on Unidesk for our application virtualization solution.

Another thing we like about Unidesk is that it is open and hypervisor/broker agnostic. We hadn't selected our virtualization platform or our end user computing platform yet. But we knew that Unidesk would work with all of them, whether we decided on Hyper-V or vSphere for the hypervisor back-end, or <u>Citrix XenDesktop</u>, <u>Microsoft RDS</u>, or <u>VMware</u> <u>Horizon</u> for the EUC front-end.

We are also starting to think and plan on which apps we will be able to migrate to the cloud. We like that Unidesk's upcoming support for <u>Azure</u> will support and complement our efforts there as well.

Gridstore - Hyperconverged Infrastructure



We use healthcare consulting firm <u>Vertitech IT</u> as a consulting partner. They have been a huge help throughout our vendor selection and design phases. They have a set of "goto" technologies they recommend for VDI based on their successful implementations at other health systems. Imprivata and Unidesk are their recommended solutions for user authentication and application management. Hyperconverged infrastructure is their recommended solution for VDI compute and storage.

We tested several hyperconverged vendors and ultimately decided on <u>Gridstore</u>. The economics of the Windows Server and Hyper-V platform were hard to ignore given our budget pressures. Not only is Gridstore the only hyperconverged solution designed for Windows Server and Hyper-V, but it also comes with all-flash storage and is extremely simple to configure and scale. When we saw how fast the LoginVSI tests were for both login performance and running desktop performance, we knew we had a winner.

It also helped that Gridstore and Unidesk had recently kicked off a partnership and had a complete reference architecture for using both products together on Hyper-V.

We plan to deploy a combination of Gridstore's standard nodes and their newer Graphic Nodes with NVIDIA Tesla M60 Grid cards to ensure the performance of our medical imaging systems and other graphics-intensive apps.

Citrix XenDesktop - Connectivity **citrix XenDesktop** Once we had decided on Windows Server and

Hyper-V as our virtualization platform, our options for end user computing were narrowed down to <u>Citrix XenDesktop</u> and <u>Microsoft RDS</u> (the remote desktop service that ships as part of Windows Server).

We had used RDS during our testing of Unidesk and found that it performed great. All of the issues around RDS scalability are really in the past once you have Unidesk. But the big issue for us is Epic. Our EMR system is our most critical app, so we had to have a solution that was approved for Epic delivery.

That's why we ended up selecting Citrix XenDesktop. It offers a fantastic end user experience and is certified by Epic. The Citrix HDX protocol uses client-side graphics processing to provide a high-definition user experience on any device, over any network - essential for our remote workers. It also makes Windows apps more aware of mobile devices, and has optimized support for touch gestures along with other native mobile device features.

IGEL and 5nine Software - Endpoints and Security



Rather than replacing all of our desktops with new thin clients, we're planning to use <u>IGEL</u> to convert about 1,000 old Dell PCs in patient rooms, kiosks, and nursing stations into software-based thin clients. We will then be able to manage these old desktops exactly the same as the 100 new IGEL thin clients we purchased.

We tested a number of vendors and found that IGEL offered the best support for all of our peripheral devices - card readers, signature pads, hand scanners in patient rooms, Fujitsu scanners, traditional scanners, printers, and many more. IGEL is really helping us get more life out of our existing infrastructure at a lower operational cost.



We're also using Microsoft ISV partner <u>5nine software</u> for our virtual firewall, antivirus, and Hyper-V management to make Hyper-V more secure while also improving our resource utilization. 5nine gives us great performance, while eliminating management of multiple agents and signature databases. We feel like we now have the industry's fastest incremental anti-virus scanning of virtual machines, which will hopefully eliminate any "AV Storms."

Our VDI Future State

Here is a look ahead at the future state of our end user computing environment, which is now being implemented. You can see many of the technologies I discussed above, with Unidesk for application packaging, deployment, and lifecycle management; Citrix for desktop delivery; Hyper-V for virtualization; Gridstore for physical infrastructure; IGEL for endpoint access; and 5nine for security.



Planned Deployment Timeline

Our planned deployment timeline for 2016 looks like this:

- Now: Beta testing with Microsoft RDS and Unidesk in a POC environment
- End-April: POC with Citrix XenDesktop and Unidesk (supported by Epic)
- Early to Mid-May: Replace current terminal servers used for Hospice at Home
- Mid-May: Deploy to Finance and Patient accounts
- June: Deploy to Nursing Stations and Patient Rooms

- July: Deploy to the Emergency Department
- August: Deploy to Critical Care Unit
- September: Deploy to Dragon Dictation Stations

Almost all of our major apps are now packaged as Unidesk layers. By the end of September, we expect to have them deployed to nursing stations, Dragon Dictation stations, Finance, Patient Accounts, Nutrition Services, and ancillary departments.

I look forward to providing updates on our progress and learning curve, plus share our end users' perspectives and lessons learned in future blogs. If you have any questions, feel free to comment below!