DERIVE TECHNOLOGIES

CASE STUDY

Citrix Application Virtualization and VDI Modernization: Non-Profit New York Metro Hospital

A renowned non-profit hospital in the New York Metro-area recently expanded—adding a series of new clinical and other facilities to their provider network.

This expansion required centralized management of software used throughout the main hospital and the new, multi-site group practice. The client also faced increased workforce mobility, with medical, nursing, and administrative personnel providing care and working in remote locations. **Derive Technologies** transformed the client's model with secure **Application Virtualization** and **VDI** from **Citrix®**, which, "gives employees the freedom to work from anywhere while cutting IT costs."

Business Challenge

Derive Technologies' client is a preeminent non-profit hospital in the New York Metro-area. In 2014, the hospital entered into a series of mergers and acquisitions that expanded their care network beyond their main campus to a new, additional, group practice. This expansion mirrored (and continues to reflect) the care extension model of other important private and public healthcare providers in New York, New Jersey, and Connecticut, and throughout the United States.

One of the principal challenges of improving and centralizing care through such expansions, and aligning work processes across any hospital's main campus and their newly-acquired satellite practices, is to effectively (in terms of cost, time, and medical results) replace legacy clinical, billing, and customer service applications with new, standardized, EMR/EHR, customer relationship, revenue cycle management, and reporting and analysis software and data. Adoption of state-of-the-art applications by all medical, nursing, customer care, financial, and human resources teams – in the primary hospital and throughout an acquired group practice – can help to improve point-of-care services, to increase productivity, to reduce redundancy, and to significantly shorten billing cycles. They also ensure more faithful compliance to federal (HIPAAA, HITECH, CMS, CDC, now ACA, and more), state, and local regulations, and, most importantly, they advance medical outcomes. However, the deployment and adoption of new technology solutions by all staff, and in all facilities, are complex processes—typically requiring significant changes to medical and administrative models, staff training, and other business workflow.

During the hospital's 2014 merger, an analysis was conducted of the main campus's then-current data center (including core network architecture, security, wireless, and

application delivery systems), its end-user technologies and its mobile (wireless) point-of-care workstations and all peripherals. This analysis was undertaken to determine the hospital's readiness for centralized, secure distribution of applications and data to all staff on its main campus, and to extend these services to each of its group practice's facilities. The analysis was performed by the client's internal medical, administrative, and technology staff, in concert with experts from a major medical software consultancy, and with the professional services team from Derive Technologies. Derive, comprising the nearly two decade-old, dedicated, Derive Healthcare practice, supported – for more than five years at the time of the assessment (now, for almost 10 years) – a number of the hospital's technology projects surrounding core IT infrastructure, end-user computing, and point-of-care workstations.

Among the findings of the assessment was that **Citrix® Application Virtualization**, as well as **Virtual Desktop Infrastructure (VDI)**, were at the time, in use within the hospital, but not on a universal basis (only by a select group of medical and administrative staff). Over the previous decade, Derive has worked with their client to implement multiple iterations of the Citrix solution set, including **XenDesktop** and **XenApp**, for specific purpose driven deployments. These implementations were used on a modest number of devices, as well as to provide remote access to specific applications for a limited selection of doctors, nurses and administrators. Utilizing these purpose-built solutions by this select community had proven successful over the years, so it was a natural progression to extend utilization of these technologies to solve a variety of current and future business challenges that were being, and continue to be, experienced by the organization.

At the conclusion of the assessment, key medical, business, and other stakeholders within the hospital and the group practice – along with the external healthcare software provider and Derive Technologies – evaluated newer-generation Citrix VDI and application virtualization (including cloud) solutions. Citrix and Derive demonstrated that the current Citrix business suite could scale to secure delivery of all primary medical and business applications for the hospital's main campus. It could also create a path to standardizing, and, later, deploying, centralized applications (on a rolling basis) to the satellite clinical facilities, as well as to credentialed (authorized) remote users working in various, ever-increasing, BYOD paradigms.

Derive Solution

Derive Technologies is a Citrix Solution Advisor Partner – with a very long relationship with Citrix, dating back to its founding – and certified in the design and implementation of advanced Citrix application virtualization/cloud solutions and VDI. In 2014, hospital's business and technology teams collaborated with Derive to design a comprehensive upgrade path for Citrix technologies to meet a multiplicity of its current and future application delivery requirements. Following the acceptance of the design, Derive's professional services team was then tasked by the hospital to deploy the upgraded and modernized Citrix solutions within the main campus. Derive also collaborated with stakeholders within the hospital and the group practice to design a standardization and onboarding path for the use of centralized Citrix services, and applications delivered through the hospital's image, by each of its new satellite facilities.

Phase one of the project (2014) comprised an upgrade of Citrix XenDesktop from Derive's now-nearly 10-year-old deployment of V5.x (5.6) to Citrix XenDesktop V7.x (7.6). According to Citrix, *"Only Citrix provides a complete virtual app and desktop solution to meet all your needs from a single, easy-to-deploy platform. Give empoyees*

the freedom to work from anywhere while cutting IT costs. Deliver Windows, Linux, web, and SaaS applications or full virtual desktops to workers on any device, anywhere."

The Citrix modernization initiative that was undertaken by Derive was accelerated when needs arose to standardize clinical and business applications requiring a 64-bit version of Internet Explorer running on Microsoft Windows 7, while the existing, older systems were running a 32-bit version of Microsoft Windows XP. While the main campus was upgrading its Citrix services, the hospital's staff was running EHR/EMR, and other web-based, applications on 32-bit Windows XP desktop and notebook computers. Conversely, the facilities within the group practice were largely utilizing 64-bit Windows 7 (at the time) on thin client devices. With the Citrix upgrade, the hospital's main IT group, supported by Derive Technologies, can standardize delivery of applications requiring either 32-bit or 64-bit windows frameworks, over the same image.

The hospital's acquisition of the group practice had two different business configurations. In the first model, the hospital would acquire outright an entire facility encompassed within the group practice, and assume all clinical and business responsibilities directly in concert with the facility's team. In the second model, the satellite facility would provide care under the group practice's brand and medical standards, but it would not be "owned" by the hospital—the hospital, as a holding entity, would provide centralized administrative services to these facilities, including IT, to standardize workflow, reduce cost and increase patient satisfaction. The new Citrix XenDesktop installation within the main hospital campus provided a scalable solution for onboarding new facilities under any business model, and employing any end-user devices (BYOD).

Citrix XenDesktop 7.6, along with Citrix XenApp 7.6, was implemented by Derive to serve the hospital's desktop and application virtualization needs. Derive supported the implementation and testing of application delivery and remote access through Citrix during the updated XenDesktop/XenApp rollout, including direct collaboration with, and support of, IT, clinical, nursing, and business stakeholders to customize and brand the hospital's Citrix image. Derive also worked with the teams to enable applications that, within the hospital's main campus, had to run in concert with Internet Explorer versions compatible with Windows 7 64-bit OS, but accessed over 32-bit Windows XP machines. (Most of these are legacy applications which have not yet been, or, perhaps, may not be for a considerable period of time, upgraded or replaced—some are clinical apps that are essential to providing care, but have not been updated at the software core.) Derive was able to help the hospital to seamlessly run these applications on XenDesktop 7.6 with different OS versions. The hospital also continues to run several farms used in application silos with previous Citrix XenApp versions, alongside of the core XenDesktop 7.6 farm. Leveraging Citrix Storefront, all of these farms can be served to end-users seamlessly through the same interface, regardless of the specific backend requirements of the application.

The group practice's end-user devices largely support, as previously stated, 64-bit Windows operating systems. While current EHR/EMR, other clinical applications, ERP and billing software, can run within the hospital on 32-bit machines, Derive can use the same cloud-based Citrix architecture, making adjustments to the XenApp terminal server, to deliver the current apps to the systems with newer operating systems. With Citrix, the onboarding process for each of the group practice's facilities is seamless. Derive's Citrix deployment enables smaller satellite offices – either under the hospital's wholly-acquired, or the outsourced administrative/IT, practice models – for which it would be cost-prohibitive to run to the organization's major EHR application over a wide-area network (WAN), to securely access the application and its data using the Citrix image.

This helps the hospital to economically deliver unified information services across the different practices that are in compliance with HIPAA guidelines. In addition, even if the satellite practice were to have the budget to utilize a WAN, or other secure application delivery services, these solutions would not provide the same level of backup and redundancy as the combined Citrix XenDesktop, XenApp and NetScaler. For reasons of HIPAA compliance, Derive and the hospital's IT team are also able to "lock down" the hard drives of mobile workforce computers (laptops, notebooks, other mobile devices) so that private data cannot be stored on them; then all access to applications and data is provided through the Citrix image.

The Results

Derive's implementation of a modern, scalable Citrix XenDesktop and XenApp framework enables the hospital and the group practice to future-proof application delivery. When servers and operating systems in the data center, and on end-user devices, are upgraded, Derive, in support of the hospital's technology team, can simply update backend management servers, and then the Citrix agents on different machines. This enables upgrades that only take days or a week, rather than months. For updates of Citrix XenDesktop, e.g. upgrading from version 7.6 to 7.8, or to any future version releases, the same process can be undertaken – simply updating the Citrix agents – with little, to, even more typically, no interruption in services.

Since the 2014 Citrix framework upgrade, different desktops within the hospital have been standardized on all clinical and business software. Derive works with the application providers to configure Citrix to push out an update in concert with the application update over a weekend, and users log on at the beginning of the new week with no downtime.

For any offices running "one-off" applications – for users within the hospital and/or in the facilities within the group practice – the modernized, Derive-implemented Citrix image will deliver a separate "fork" of the desktop implementation, either on legacy devices or thin clients. As the hospital onboards new clinical facilities under their different business models, this forward-looking implementation enables significant flexibility in the secure, HIPAAA-compliant distribution of hospital-standard applications to any facility, of any size, with any budget, over all devices, anywhere.

The hospital's executives have realized significant cost savings – for the main campus and for new practice acquisitions (or for practices that remain independent, but utilize the hospital's administrative services and are branded under the group practice) – for the continual deployment and upgrade of EHR/EMR and additional clinical applications, and all administrative and customer relationship applications, through the highly flexible Derive-implemented Citrix image. Ongoing application training, user behavior modeling, and more are made dramatically less difficult and time-consuming, which improves patient care and overall productivity, and reduces total cost of ownership of applications and systems. Consistent application delivery using the Citrix services supported by Derive also shortens billing cycles—with web-based billing seamlessly delivered to customers, and with stable software upgrades keeping the applications up and running at all times. All of this also increases patient satisfaction, which is measured and with financial credits given to hospitals and other clinical facilities that effectively meet Performance Improvement CME, Patient Satisfaction standards.

According to the hospital's administration, Derive's professional services team was, and continues to be, considered an extension of the hospital's IT staff, providing sophisticated, diverse technology capabilities –

surrounding Citrix, core IT infrastructure, wireless, secure sign on and application delivery, and end-user systems, as well as deep knowledge of healthcare computing – at significantly reduced cost to the organization. The hospital can leverage Derive's Citrix architects at a fraction of the cost of hiring technology professionals in-house with the depth and breadth of experience that Derive can provide.

As a trusted advisor, Derive continues to support the hospital's Citrix project, and a variety of other technology initiatives – including a separate, significant project surrounding point-of-care workstations – for this client. This includes ongoing support for Citrix upgrades, coordination of new application launches over the hospital's branded image, and the delivery of images to new satellite clinical facilities within the group provider network. Derive is providing these services, and continues to perform standard troubleshooting, under a long-term retainer.

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