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The Essentials Series: Important Questions in Implementing Virtual Desktops

What are Others Doing with Virtual Desktops?

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What Are Others Doing with Virtual Desktops?

The first two articles in this series have attempted to answer the questions surrounding "why" virtual desktops make sense for the business. The architectures and technologies behind virtual desktops were explained in detail, showing how multiple technologies aggregate to create a virtual desktop infrastructure.

But knowing that a thing can be done doesn't necessary explain how and where it should be done. This third and final article will attempt to answer those questions, detailing how and where many organizations are currently and successfully using virtual desktops. Delivered as a series of generalized case studies, this article will explain how a few organizations have turned virtual desktops into a competitive advantage.

Case Study #1: Mobile Access Stations at a Hospital

ABC Hospital is a large hospital with multiple departments, all of which are served by a centralized IT organization. The primary responsibility of the IT organization is in maintaining the hospital's data center as well as its unified patient service application. Within this application are stored all forms of patient records, including prior admissions, doctor notations and recommendations, prescribed drugs and interactions, as well as imaging via x-ray, MRI, or other devices. As the singular application that handles and records virtually every facet of patient interaction, it is needed in every examination room by multiple doctors and nurses.

The problem with ABC Hospital's use of this application relates directly to the login process required to connect doctors and nurses into the application. Because both groups of people regularly move between offices, yet need access in each office to patient records via the application, the time to connect must be minimal. ABC Hospital's original attempts to leverage traditional Windows logins and logouts with locally-installed workstations often required login and application startup times of multiple minutes. This was unacceptable to both doctors and nurses, with the original system quickly being scrapped as alternatives were sought.

Microsoft Terminal Services- and Citrix XenApp-based solutions were also rejected due to incompatibilities in the application itself. This application was developed for the healthcare industry and was not created to be interoperable with traditional remote application infrastructures.

A workable solution was developed that leverages the rapid connection and disconnection power of virtual desktops. As virtual desktops remain assigned to individual doctors and were not logged off or powered down as doctors relocate from room to room, an individual doctor can quickly connect to their assigned desktop with its applications already loaded. To the doctors, the user experience appeared as if each monitor in each examination room were independently connected to their personal desktop. Connection time was reduced to a single-digit number of seconds rather than the multiple-minute requirements of the physical desktop infrastructure. This improved the doctor/patient relationship, and even saved a few lives over the course of its lifespan.

Case Study #2: Hot Desking at a Three-Shift Call Center

ABC Call Center is a three-shift call center that handles multiple clients. First- and second-shift operators typically handle customer service activities across ABC Call Center's client list, with its third shift dealing with emergency situations. As a multiple-shift environment, employees use available desks during their 8-hour shifts. This workflow means that any particular hot desk is generally always staffed during the full 24 hours of the day.

In order to process calls, ABC Call Center leverages a central call center application. This application presents the necessary scripts to employees as well as enables actions that can be accomplished by the employee in resolving a customer problem. Because ABC Call Center handles multiple clients at once, the same employee can handle requests across multiple clients during any particular shift, with their individual scripts and actions being presented to the employee by the application.

ABC Call Center originally leveraged the use of physical desktops at each hot desk. This configuration enabled users to log in as they arrived for work, and log out as they completed their shift. However, it suffered from a number of critical limitations. The employees for ABC Call Center had a tendency to "play" with the desktops during irregular downtime periods. This non-work use of the systems regularly led to their need for troubleshooting or re-imaging. However, due to the high utilization of the call center as well as its multiple-shift nature, any downed computer meant one less employee handling calls on the call room floor. Further, the installation of required updates to the individual desktops created a substantial impact on operations.

To remedy this situation, ABC Call Center leveraged a set of zero clients that connected to a pool of virtual desktops. Installed to those virtual desktops was the call center application. They were further locked down to prevent known forms of non-work use.

Because virtual desktops were used in a pooled configuration, any user automatically received an arbitrary, available desktop. That desktop was always properly configured for their use, because each was constructed on-demand from a reference image as the employee logged in. Updating the pool of images required updating only the reference image and forcing a refresh of all virtual desktops in the pool, effectively provisioning any update automatically at the next shift change. The result to ABC Call Center was a substantial increase in worker efficiency and a reduction in costly downtime to nearly zero.

Case Study #3: Training Lab at a University

ABC University is a large university with multiple departments. After a major centralization activity, IT services for all departments were unified under a singular organization. This enabled ABC University to consolidate its dozen computer labs into a single building that could support the needs of all departments at a much lower operational cost.

However, quickly after the consolidation, it was found that the physical environment used by the lab was insufficient for the rapid re-provisioning needed by different faculty. For example, a computer lab that was configured for use by a Foreign Languages professor would be needed during the next teaching hour by a Computer Sciences professor for a completely different class. Whereas the Foreign Languages professor's class required only a simple application, the Computer Sciences class might engage in wholesale manipulations to the systems and the network. As a result, professors would regularly find that the computer lab was insufficiently set up for their needs.

As a further need, the university found itself wanting to provide access to labs for users at all hours and from all locations. This access would alleviate the strain on the actual computer lab by allowing students to access lab equipment over the network and from their dorm rooms.

A mechanism to accomplish both the rapid redeployment as well as the ubiquitous access problem was needed. The creation of a virtual desktop infrastructure was eventually decided upon by university IT. Such an infrastructure enabled lab administrators to create and manage multiple reference images, one for each professor and class. With enough processing power in the university's data center, lab administrators were able to clone dozens or even hundreds of images that were specifically created for each lab. This could occur in the 10 minutes between one class ending and another starting. Professors with needs for new images could simply create them according to a standardized process and submit them to IT for uploading into the virtual desktop infrastructure.

Extending the early implementation to the rest of the university's network infrastructure required very little extra effort on the part of IT. A third-party orchestration component was customized by the university that enabled students to connect to any class's virtual desktop. Such a desktop could be cloned at any point during the day and would be available for the student for a period of 4 hours before being automatically removed. User data was gathered from any and all images prior to removal, enabling users to reconnect at their leisure.

The result was a significant reduction in wait times for lab equipment as well as an increase in student and professor satisfaction with the overall environment. Ultimately, both professors and students found themselves needing less actual real-time access to lab equipment during the day, reducing power costs as well as the count of equipment necessary to run the university's classes.

Case Study #4: Disaster Recovery Operations at a Corporation

ABC, Inc. is a multinational corporation with offices in the United States, EMEA, and Japan. As a multinational corporation with very high-end clients, its data processing had a requirement of 99.95% uptime. Its customers were highly intolerant of both downtime and any loss of data. This fact required ABC, Inc. to create and execute a disaster recovery plan that assured continued access to data, even during disaster operations. Although ABC, Inc. was able to replicate its data to multiple alternative sites, and was further able to replicate its application servers to those sites, it found itself unable to connect employees to necessary applications in the case of a disaster.

ABC, Inc. eventually settled on a virtual desktop solution as its architecture for disaster operations. A virtual desktop infrastructure was implemented to support its most-critical 30% of employees who were specifically targeted for continuing their work during a disaster. The other 70% of employees were not deemed mission critical, which enabled ABC, Inc. to incorporate a standby virtual desktop infrastructure of smaller size and cost.

Because ABC, Inc.'s virtual desktop infrastructure was hosted in a third-party facility away from its other operations, its mission-critical users were configured to access their disaster operations virtual desktops via the Internet. Users no matter where they were in the world could access replicated ABC, Inc. data to continue the operations of the company.

Although this standby virtual desktop infrastructure was useful in the case of a disaster, it was later leveraged during nominal operations for its field support teams. While in normal operations, up to 30% of its workforce could securely and safely access ABC, Inc.'s most critical business applications from any Internet endpoint. Ultimately, ABC, Inc. was able to improve its agility through this implementation alone such that it was able to extend operations in both EMEA and Japan where direct LAN/WAN connections were sparse.

Case Study #5: Point-of-Sale Stations at a Multi-Site Retail Company

ABC Retail Company exists in more than 100 locations spread throughout outdoor malls in the United States. A retail company that specializes in the sale of items as opposed to services, multiple point-of-sale (POS) terminals were required in each store to complete customer transactions.

Originally leveraging a mainframe application for the completion of such transactions, ABC Retail was forced by obsolescence to upgrade its technology to a Windows-based solution. This Windows-based solution enjoyed a much greater set of capabilities for tracking orders and analyzing trends in purchases. It, however, also required a network and directory services infrastructure in each individual store. Looking at the possibility of extending its Windows Active Directory (AD) domain along with accompanying server infrastructures out to each and every store, ABC Retail Company began looking for alternatives.

Being a company in more than 100 locations, the idea of distributing server equipment to each store represented an administrative nightmare. With so much distribution of equipment, even the most simple of maintenance processes such as monthly patching would be a painful process. ABC Retail Company needed a mechanism to centralize its infrastructure rather than distribute it to support its new Windows application.

ABC Retail Company also settled on a virtual desktop infrastructure as its solution of choice. Using zero clients as the mechanism for delivering the application's user interface (UI), the company was able to deploy very little hardware to its individual stores. Improving the situation even more was the idea that zero clients could be replaced by non-technical retail managers when problems occur. If a problem occurred, the manager need only ship the device back to the central IT organization. Replacements were kept on-site in each store, and reconnecting to the infrastructure and POS terminals involved little more than plugging in and powering on a replacement device.

As a public retail establishment, ABC Retail Company also handles payment cards, which means its infrastructure falls under both the Sarbanes-Oxley Act as well as PCI compliance regulations. It was easily able to fulfill the requirements of both compliance regulations because it's selected zero clients could connect to payment card peripherals as well as encrypt payment card information as it crosses the wire back to the central office. Payment card approvals were done within the virtual desktop and not in the local store, so any theft of computing equipment could not expose the company to liability. Security of the environment was maximized because all customer data was always stored in the central data center. As a result, ABC Retail Company was able to expand its operations at will without fear of data exposure or loss.

Virtual Desktops Expand Application Access to Everywhere

These are but examples of how virtual desktops can extend the reach of your network infrastructure to virtually anywhere. Whether you're a university looking for a very extensible computer lab or a multinational corporation trying to expand into otherwise impenetrable markets, a virtual desktop infrastructure can extend the business applications on your LAN to where you need them most. Adding a deployment of zero clients to that infrastructure ensures the highest return on your virtualization dollar, while creating an infrastructure that easily scales to your business' needs.