



WTC Communications Keeps Rural Kansas Connected with VMware Virtual Desktop Infrastructure

VMware Virtual Desktop Infrastructure Solution Enables Remote Desktop Environment, Saving \$600 per PC

RESULTS

- Saved about \$600 per PC
- Reduced thin client deployment time from hours to minutes
- Maintained security of sensitive corporate data
- Provided seamless user experience
- Simplified and centralized management of desktop environments

High-Speed Internet and Digital TV in the Boonies

Located in the Kansas River Valley next to the scenic Flint Hills, Wamego and the surrounding communities of St. George and Paxico have been served by Wamego Telecommunications Co. (WTC) since 1912. WTC provides the latest in telecommunications services to its 3,000 Internet customers, 2,500 cable TV customers, and 5-6,000 telephone customers.

WTC provides service and coverage for 99.9 percent of its service area. "Our mission is to provide high quality, affordable services with the latest technology to all of our customers," says Jim Jones, network administrator for WTC. "Being in rural Kansas, when we say all, we mean all. You can drive into the boonies and still get DSL. Even if it's 20 miles from the middle of nowhere."

With the company's rapid growth and commitment to innovation, WTC began to look for a server consolidation strategy in January 2005. "We needed to get 16 or 17 new servers and would need the rack space, cooling, power, switches – all the things that make consolidation make sense," Jones says.

So Jones went with Olin Hamilton, systems administrator for WTC, to a VMware seminar to learn about server consolidation on ESX Server. "We saw a presentation about how Sprint was using VMware software, but we realized that you don't need to be a large company to be able to benefit from this technology," says Jones. "The whole way home, we were excited. We kept saying, 'the possibilities are endless.' Even now, we keep saying that; it hasn't gotten old and we're still excited about the

software's capabilities. Every time we turn around, there's a better use for it; it lets us do something we couldn't do before."

Building a Virtual Desktop Infrastructure

At the same time WTC began looking for a server consolidation solution, it was also looking for a solution to streamline desktop computer deployment. "We were at a technology show in Kansas City, and were looking at solutions," Jones says. "We were going to need 10 to 15 desktop computers. We looked at one solution where you could put all the PCs in the datacenter, then put a thin client on each person's desk and manage centrally located PCs. For the management software, you had to install three versions of Java, two versions of Active Perl, and two versions of Apache server to manage this behemoth. It was supposed to make things easier, but it made things impossible."

When Jones decided to buy VMware ESX Server, it hadn't occurred to him to use it to host desktop environments. But when the other solution did not pan out, and two employees were starting work with short notice, WTC needed computers for the new personnel to use temporarily. Jones and his team set up some older computers as thin clients so the new employees could use remote desktop protocol (RDP) to access Windows XP virtual machines running on virtualized servers.

"It was pretty cool, so we decided to use VMware

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Network Administrator, WTC Communications



for a hosted desktop solution," says Jones. "Now, with VMware virtual desktop infrastructure in place, anytime someone needs a new computer, it is easy and inexpensive to create a thin client. A new user, even one with an old laptop, can RDP to a virtual XP box, and it works beautifully."

From the thin client, the user can log in and access the appropriate virtual machine running on ESX Server. "We don't have anyone who is a heavy user," says Jones. "Our staff uses Microsoft® Office and our customer billing software. The users are set up so they can move around; they can RDP from home. They don't realize they are using RDP; it's all on their computers."

Jones uses 2X ThinClient Server for Windows installed on a host with VMware ESX Server. The software integrates with Active Directory for the login and access, and user connections and hardware settings can be adjusted so software on the server is directed to the thin client. "Depending on how an account on the thin client server is set up, users are directed to the appropriate terminal server," says Jones. "From our end, it's a virtual Windows XP box on ESX Server."

VMware virtual desktop infrastructure is also cost effective. Using the 2X ThinClient software, WTC does not need high-end thin clients. "You can use almost any hardware with it," Jones says. "You can spend \$125 for the thin client and it will work fine." For up to 10 users, 2X ThinClient software is free, and for up to 25 users, it's just under \$600.

The Results: Increased Capabilities at Lower Cost

With VMware virtual desktop infrastructure in place, WTC benefits from:

- **Cost savings.** WTC saved hundreds of dollars per desktop, deploying and supporting thin clients with RDP instead of fully configured desktops or high-end thin clients.
- **Quick, easy thin client deployments.** Instead of needing to procure and set up physical computers, WTC already has virtual machine templates set

up in its virtual desktop infrastructure. When a new user joins the company, Jones can easily set the user up with a customized virtual machine, user-name and password. "We can provision a desktop environment for a user in 15 minutes," says Jones.

- **Hardware independence.** With VMware virtual desktop infrastructure, WTC does not have to standardize on one type of hardware or worry about compatibility with different hardware. "Any type of hardware works fine," says Jones. "We don't have to spend time dealing with hardware requirements. It also lowers our costs because we can get less expensive thin clients and it will work fine."
- **Increased security.** With applications residing in the datacenter on VMware ESX Server instead of on users' desktop computers, WTC keeps company data protected. End users can only access the network after they've successfully logged into WTC's Active Directory. Then, users have access to only their own virtual machines.
- **Centralized, simplified management.** WTC can easily migrate desktop environments to alternate hardware and add, update, change or back up desktop applications without user intervention.
- **Seamless user experience.** End users have full access to the desktop as they would if it were running directly on a PC.
- **Disaster recovery and backup.** The virtual machines all reside on the same storage area network (SAN), enabling WTC to leverage existing disaster recovery and backup processes.



VMWARE VIRTUAL DESKTOP INFRASTRUCTURE AT WORK

- ESX Server on 2-CPU Dell PowerEdge 2850 servers, with 8 GB RAM
- EMC CX-300 SAN
- Guest operating systems include: Microsoft® Windows XP
- Applications running on virtual desktops include: Microsoft® Office, Open Office, Internet Explorer, Outlook Express, Custom Billing Software, CAD Viewing Software, Acrobat Reader

Growing the Business

With the success of using VMware software for server consolidation and remote desktop hosting, WTC plans to further expand its virtual infrastructure to offer even more services to its customers. "There were things we couldn't do before because of hardware costs," says Jones. "Now we can offer Web site hosting, server hosting and other services. We're able to buy licenses for software, provision it in a virtual infrastructure, provide services to customers at a low cost, and still see a profit."

For example, WTC can provide server hosting, including firewall protection. "One customer wanted a PC hosted on our server, so he could RDP into it from anywhere," Jones says. "We found IPCop, a CD-ROM-based Linux firewall and created a virtual machine plus extra VLANs. We can use VMotion with IPCop and it works as a firewall. Now he has an XP box behind its own firewall that he can VPN (virtual private network) into from anywhere. So we host his entire network."

Jones adds that it is now economical to try out new project ideas because WTC can do it on virtual machines instead of investing in more hardware. "We can try new services, offer them to customers, and if it sells, continue them," he says. "It lets us think of new ideas instead of trying to figure out how to buy the hardware."

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