

# Thin clients in, PCs out at Verizon Wireless

## Carrier says Sun Ray technology cutting call center costs

*By John Cox, Network World, 05/04/07*

**Verizon Wireless** is hip deep in a project to replace thousands of call center PCs with Sun Microsystems' thin client terminals. And the carrier is already counting up the savings.

With about 5,000 Sun Ray terminals installed at three Western call centers, and a fourth in progress, Verizon has seen a 60% to 70% drop in desktop problems and a 30% decline in electrical use at each center. The carrier plans to keep rolling out Sun Rays in new and existing call centers.



Smart-card activated Sun Ray thin clients have dramatically cut desktop tech support and power use at Verizon Wireless call centers, says Carl Eberling, vice president of IT for the carrier's West Area. The Sun Microsystems thin client, with its smart-card, is shown under his left hand, at a customer service desk in the Irvine, California center.

The deployment is Verizon's first for a large-scale thin client architecture, part of a growing enterprise trend to virtualize the desktop. The carrier's new approach emerged in fall 2005, when Carl Eberling, vice president of information technology for Verizon's West Area, asked his team for ideas to cut IT costs at existing and new call centers. The conclusion was that thin clients on desktops, with the applications running on servers, would have to be replaced much less often than PCs, and would cut capital costs but, more importantly, also cut management and support costs.

### **The thinnest of thin clients**

Sun's Sun Ray is unique among thin clients, many of which still use some kind of embedded Windows or Linux operating system, even though the applications are shifted to servers. In such architectures, the video display is redirected over the network to the desktop thin client box for processing and display.

"There's nothing on the Sun Rays," says Michael McGuinness, senior member of technical staff, who co-designed Verizon's architecture and helped oversee the deployments. "Not even a light OS. That's where the cost savings come in."

The desktop box contains only some firmware that puts the display video onscreen and talks to the Sun Ray server software, which tracks everything about the user and the user's session.

Call center reps now have an arm-mounted 19-inch flat panel display, with the compact Sun Ray box on a desktop perch. Users power up the Sun Ray by inserting a personal smart card for two-factor authentication, type in their Windows username and ID, and within seconds can begin working with the server-based applications. In the near future, this same smart card will be used as the employee ID entry card to enter the call center.

This system replaces the Windows PC stored under the desk. "We had to reboot it often," says Doug Robertson, customer service coordinator at Verizon's Chandler, Ariz., call center, the site of the first deployment. "They [tech support] were forever upgrading the PC, adding more memory. And I had to wait for the programs to load, I had to reboot, turn it off, turn it on. [With the Sun Rays,] I haven't seen anything go down in this call center in four or five months."

A related user benefit is dubbed by Sun "hot desking." A rep or a supervisor can simply pull the smart card from the Sun Ray without logging off, which causes the display to revert to the standard log-on window. Then inserting the card into any other available Sun Ray brings up the log-on screen, and after a valid logon, the user's complete original session reappears, just as it was when he pulled the card from the first Sun Ray. Supervisors can stop at a rep's desk and approve a customer credit right there, or a rep can move from a sit-down to a standing workstation, or a team can form and move to a group of Sun Rays.

### **An unexpected choice**

In some ways, the choice of Sun Ray was unexpected. Call center applications were Windows-based, running on PCs, with access to back-end databases. There was little Unix expertise. "No one was more scared of Unix than me," McGuinness recalls. "But all it took was to get into it. We got comfortable with it pretty quick."

Verizon did consider Citrix Presentation Server, one of the best-known server-based client infrastructures, with its attendant Windows server farms running Windows Terminal Services, accessed by thin clients running the Citrix ICA protocol. Citrix itself is embracing virtualization as the next evolution in server-based computing.

But Verizon eventually rejected the Citrix framework. "If you don't need the load balancing that Citrix gives you, you don't need Citrix," McGuinness says.

Instead, Verizon opted for a scheme that at first seems almost more complicated, with the additional danger of creating latency and performance problems: two dedicated and interconnected server clusters, one Unix-based, one Windows-based. But Verizon managers say the stripped-down thin clients, without even an embedded operating system, keep the deployment simple. "The only problem we can have on the desktop unit is a hardware failure," says McGuinness.

And the Sun Ray server software on the Unix cluster has proven simple, reliable, and actually improved desktop performance for most users. The two clusters are linked via a high-capacity network. "Users have seen an improvement in performance, especially with Web and net-based applications," McGuinness reports.

At startup, the thin clients connect to a group of Sun Solaris 10 servers, loaded with the latest version of the Sun Ray Software application. The trio of components in this software handles user authentication, encryption, session management, load balancing, automatic failover, centralized desktop management and a direct connection via Microsoft Remote Desktop Protocol to the second cluster of Windows Server 2003 boxes, with Windows Terminal Services. This second cluster runs the various call center applications used by the reps.

One key step in the deployment was to test the user applications to make sure they would work properly running now on Windows Terminal Services as multiuser applications. All ran without any coding changes, McGuinness says.

Once the server infrastructure was installed and tested, the desktops were changed over in phases at each call center. Deployment of both server clusters went smoothly. One minor problem was the discovery that some Sun Ray commands could affect the entire Solaris cluster. McGuinness says experience quickly taught them how to deal with that.

Users were alerted to the pending change, and the IT group organized training sessions with the Sun Rays beforehand. The user changes were minimal, says Doug Robertson, such as switching from the PC-based Microsoft Exchange client to the Web client. In his case, the performance improvement was dramatic. "You're not sitting there waiting and waiting, with that hourglass [spinning]," he says. "As soon as I hit that mouse and click on an icon, it's there. It's very quick."

### **Sun Ray impact on tech support**

The decrease in PC support has several components. One is simply fewer problems. "We went from an average of about 100 'break-fix' trouble tickets a month to less than 40," Eberling says. That translates into less demand for IT tech support, and greater uptime, and hence productivity, for the call center reps.

Second, the remaining problems are simpler. About 20% of problems are "user profile related," most commonly a lost smart card. Only 10% of problems are systems related, says McGuinness.

Third, tech support staff members have been re-allocated to more pressing issues. Generally, Verizon had four dedicated tech staff members per 1,000 seats to handle desktop trouble tickets. With the Sun Rays, that's been cut to one staffer.

Finally, the electrical power use at all three of the call centers dropped by just over one-third after the Sun Rays were deployed. Sun boasts that the thin clients run on just three watts, compared with an average of 55 watts for PCs. Another contribution to the power savings is that removing the card turns the Sun Ray completely off.

The Chandler call center had alerted its electrical supplier, and asked the utility to monitor power demand before and after the change-over. After the Sun Rays were online, Eberling says, their utility account rep called and jokingly asked, "Have you guys moved?"

The power drop has wider ramifications than just saving on monthly utility bills (Eberling won't say what the dollar savings are). In building new call centers, Verizon has to plan for electrical outages and for backup capacity, which calls for a series of trade-offs, such as how many desktops can be sustained for how long with backup capacity. The Sun Ray power savings simplify that.

"With lower power consumption overall, you can keep more people up and running in an outage than you would be able to otherwise, at the same cost," Eberling says.