How Cisco IT Deployed a Laptop-Based IP Telephony Solution

Cisco IP Communicator for mobile employees improves productivity and reduces cell phone costs.

Cisco IT Case Study / IP Communications/ Cisco IP Communicator: This case study describes Cisco IT's internal deployment of Cisco IP Communicator within the Cisco network, a leading-edge enterprise environment that is one of the largest and most complex in the world. Cisco customers can draw on Cisco IT's real-world experience in this area to help support similar enterprise needs.

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– Lee Williams, IT Project Manager for Cisco IP Communicator

CHALLENGE

Mobile employees at Cisco Systems®, such as account managers and sales engineers, typically used cell phones to make and receive calls, check voicemail, and dial into conference calls. This posed two problems. One was the average cell phone bill exceeded US$100 per month. "With more than 10,000 mobile employees, reducing the average by even a small percentage would create savings of hundreds of thousands of dollars a year," says Lee Williams, IT project manager for Cisco IP Communicator.

The other problem was that cell phone users lacked access to Cisco® CallManager productivity features available to employees at Cisco headquarters and offices, such as Cisco Unity® Unified Messaging, 5-digit dialing, Cisco MeetMe conferencing, and an online directory of Cisco employees. "We estimated that Cisco employees who traveled most of the time could save the equivalent of several hours a week if they had access to these features," says Williams. Cisco IT was especially interested in improving mobile employees' productivity through unified messaging. In a 2005 study of 83 large enterprises that used IP Communications, 63 percent of companies who used unified messaging reported improved productivity for mobile employees, compared to 45 percent of companies that did not use unified messaging.[1]

SOLUTION

Cisco IT reduced cell phone costs while increasing productivity by providing mobile employees with Cisco IP Communicator, a software application that transforms a laptop into the equivalent of a Cisco IP phone (Figure 1). When mobile employees connect a wired or wireless Plantronics headset to their laptops and establish a virtual private network (VPN) connection, they can use Cisco IP Communicator to make and receive calls and use the same productivity features they would enjoy at Cisco headquarters or their own offices.

[1] Sage Research, "Productivity and the IPC Business Case - Analysis of Large Enterprises," April 2005

Figure 1. Cisco IP Communicator User Interface on the Laptop or Desktop Display

"Suppose an account manager is at a hotel or in a coffee shop and wants to dial into a Cisco MeetingPlace conference call," says Williams. "Using a cell phone, the employee can only participate in the voice aspect of the conference. But using Cisco IP Communicator, he or she can participate in the Web collaboration aspect of the call. And because the call travels over the Cisco IP network at least part of the way, Cisco saves the per-minute service provider charges."

Cisco IP Communicator also enables employees to retain the same phone number regardless of whether they connect from home, a wireless hotspot, or a Cisco office in another country. A Cisco account manager based in Holland might also visit customers in Belgium, France, and Switzerland. From any Cisco office, the account manager can simply connect a laptop to the network and not have to look for an available IP phone. Customers and other Cisco employees can use Cisco IP Communicator to reach the account manager by dialing his or her usual phone number or extension. "Making employees easier to reach improves both responsiveness and productivity," says Williams.

Deployment

For the initial deployment, Cisco IT selected 700 existing Cisco IP SoftPhone users in Sydney, Australia; Brussels, Belgium; Research Triangle Park, South Carolina; and Herndon, Virginia, as well as all U.S. sales directors. "We limited the initial deployment so we could measure the effectiveness of the software distribution vehicle and determine support requirements for a companywide roll-out," says Williams.

To distribute the Cisco IP Communicator software, Cisco IT considered two methods. With SoftTracker, employees visit a Website to download the software. The other method, Altiris software, "pushes" the software to selected employees without requiring any action from the employee. Cisco IT chose SoftTracker. "We predicted that interest in Cisco IP Communicator would be high because of its usefulness and 'fun' quotient," says Williams. "With Altiris, distribution of 700 copies of Cisco IP Communicator would occur over a 24-hour period, and we wanted to avoid

support calls from people wondering why their neighbor had received the software and they had not." Cisco IT sent e-mail messages to users in the pilot notifying them that Cisco IP Communicator was available.

The pilot, conducted from October through December 2004, proceeded smoothly. After the installer completed its setup process, it displayed a FAQ that addressed typical questions, such as which Plantronics headsets were supported, how to order and install the headset, what to do in the event of an error, advantages of using IP Communicator instead of cell phones at airports and hotels, and how it worked over wireless networks. "The FAQ helped avoid an artificially high number of installation-related support calls," says Williams. "During the pilot, we needed an accurate measurement so we could determine the appropriate engagement level for the Cisco Global Technical Response Center."

After the initial pilot, Cisco IT migrated all Cisco IP SoftPhone users to Cisco IP Communicator by region, in the following order: Asia Pacific; the Americas; and Europe, the Middle East, and Africa (EMEA). The last region made the transition in July 2005.

RESULTS

Reduced Phone Bills

According to Williams, Cisco Finance estimates conservatively that Cisco employees' reimbursable cell phone bills will decrease by five percent, resulting in US$500,000 annual savings. Calls placed within the Cisco network incur no charges, and calls off the Cisco network are less expensive than they would be with cell phones because Cisco receives negotiated long-distance rates based on high volume. International calls are also less expensive because they can travel over the Cisco WAN to a location near the destination and then hop off. Other sources of savings, which Cisco has not quantified, include less expense for calling cards, reduced home telephone bills, and reduced forms processing for expense reimbursement.

Reduced Support Costs

Management costs are lower—administrators use the same management interface for Cisco IP Communicator as they do for Cisco IP phones. Software updates are delivered automatically via Trivial File Transfer Protocol (TFTP).

IT resources for deploying Cisco IP Communicator were $140,000. Based on the low support requirements for the pilot, Cisco IT engaged the Cisco Global Technical Response Center (GTRC) and set up a service agreement at half of the cost of the agreement needed for Cisco IP SoftPhone, which had higher support requirements. "Our net present value over three years is $1.7 million," says Williams. (Net present value is calculated by adding up the present value of the net benefits for each year, and then subtracting the initial costs of the project.)

Greater Productivity

"We estimate that Cisco IP Communicator helps increase productivity by three to five hours a week per user," says Williams. These results are consistent with independent studies. For example, a Sage Research study conducted in September 2005 reported that 90 percent of organizations using softphones realized time savings for traveling employees, an average of 40 minutes per day.

The most valuable productivity features for mobile employees include three-way calling, conferencing, 5-digit dialing, and being reachable at their local extensions while traveling. Traveling employees can conveniently access back-end services such as sales support by touching soft keys on Cisco IP Communicator, just as they could using a Cisco IP phone at the office.

In addition, mobile employees no longer need to manage separate voice mailboxes for office, mobile, and home. Instead, employees have one phone number and one voice mailbox.

Enthusiastic Acceptance by Employees

Cisco IT anticipated that 12,000 existing IP SoftPhone users would download Cisco IP Communicator. Cisco can track the number of employees actually using Cisco IP Communicator, not just downloads, using Cisco CallManager scripts that identify endpoint usage. “Acceptance of Cisco IP Communicator exceeded our expectations,” says Williams. “We have 16,000 users as of August 2005, with 1000 new users each month.” Part of the reason is the ease of use of Cisco IP Communicator compared to a cell phone. “For employees who travel, it’s much easier to dial internationally with Cisco IP Communicator than with a cell phone,” says Doug McQueen, manager of IT Strategic Program Management. “Productivity improves because employees can simply dial ‘8’ plus the internal dial plan.”

Excellent Voice Quality

Employees who use Cisco IP Communicator with a 128-Kbps or faster connection experience the same voice quality that Cisco employees experience at any local office. “Voice calls only require 70-Kbps available bandwidth,” Williams explains. Voice quality remains excellent when employees connect over shared collision domains like wireless LANs (WLANs). The Cisco IOS® Software in Cisco routers and Cisco Catalyst® switches gives priority to voice traffic—whether it originates from Cisco IP Communicator or Cisco IP phones—helping to eliminate contention for bandwidth from data applications.

Other factors contributing to excellent voice quality in Cisco IP Communicator include advanced jitter buffer and packet loss concealment algorithms, an audio “tuning wizard” for setting audio levels, and echo suppression and noise cancellation.

Greater Security Than Cellular Phones

When Cisco employees use Cisco IP Communicator, voice traffic travels over a VPN, which means it is encrypted from end to end. “Voice conversations over Cisco IP Communicator are more secure than they are over cellular phones or home phone networks,” says Williams.

NEXT STEPS

As of September 2005, all Cisco employees can download a copy of Cisco IP Communicator from SoftTracker. The only back-end process is registering the laptop’s MAC address on Cisco CallManager. To automate this process, Cisco IT wrote a script so that if Cisco CallManager does not recognize the laptop MAC address of a new user, it automatically opens a case and sends an e-mail message to the employee providing the case number and stating when they can begin using Cisco IP Communicator.

Cisco plans to take advantage of new features of Cisco IP Communicator as they become available, including interoperability with Cisco VT Advantage to add video to calls, convenient dialing options such as drag-and-drop or cut-and-paste, and assigning keys for functions like answering or hanging up.

LESSONS LEARNED

When Cisco employees use Cisco IP Communicator from Cisco offices, they sometimes connect over WLANs. Ensuring excellent voice quality over WLANs requires special design considerations, which Cisco IT took into account. The metrics for the quality of service (QoS) needed for voice include end-to-end delays less than 150 ms, low jitter, effectively zero percent packet loss, and high reliability. To read guidelines for designing a WLAN infrastructure for voice, go to:

http://www.cisco.com/en/us/partner/products/hw/phones/ps379/products/implementation_design_guide_chapter09186a00802a0367.html

Cisco IT regards the deployment of Cisco IP Communicator as a complete success, “a very low-touch deployment with no hand-holding,” says Williams. “We attribute the success to the quality of the software and a careful planning process, including risk and benefit analyses that considered both productivity and financial advantages. We took as long to perform the analysis as we did to deploy.”

Williams concludes, “Cisco IP Communicator cost $260,000 to deploy and has a net present value of $1.7 million over three years. That’s a pretty good business case.”

FOR MORE INFORMATION

To read the entire case study or for additional Cisco IT case studies on a variety of business solutions, visit Cisco on Cisco: Inside Cisco IT www.cisco.com/go/ciscoit

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