



## SHORETEL SPEEDS VoIP INSTALLATIONS AND ELIMINATES COMPLEXITY FOR U.S. ARMY CORPS OF ENGINEERS

U.S. Army Corps delivers calls regardless of location supporting its mobile operations

### Challenge:

U.S. Army Corps Huntington District's Centrex-based voice system had become a liability. It was expensive and inflexible, and the service provider typically took two weeks or more to process orders for simple changes.

### Solution:

A single ShoreTel VoIP system is distributed across headquarters, remote sites, and a mobile repair fleet, and is easily managed from anywhere by the internal staff. An intuitive Personal Call Manager interface with Outlook integration gives users extensive call-handling options; other advanced features include enterprise-wide hunt groups, and built-in conferencing with integrated document sharing.

### Benefits:

Monthly recurring costs were reduced 70%, resulting in an 18-month ROI. Easy implementation and management enables immediate in-house changes and a cookie-cutter rollout process for new offices or disaster recovery. Users are empowered with PBX-type call control and location independence, streamlining communications, facilitating mobility, and boosting productivity.

The U.S. Army Corps of Engineers has been the nation's engineering problem solver since 1775, and the Huntington District leads the Corps in the construction of flood-control dams, levees, and floodwalls. The Huntington, W.V.-based District is also leading the convergence charge with a distributed ShoreTel IP telephony system that delivers advanced voice services across its five-state territory and mobile repair units.

Communication is key to virtually all Army operations, and by 2003 Huntington District's TDM-based voice infrastructure had become a distinct liability. The infrastructure expert needed a better voice infrastructure for its 45,000 square miles, which cover more than half of West Virginia and Ohio, as well as portions of Kentucky, Virginia, and North Carolina. About half of the District's 1,000 employees are in the Huntington headquarters, with the rest spread across 49 remote sites and one floating repair vessel fleet.

Huntington District's legacy voice system consisted of ISDN lines connected to Centrex service. It wasn't a flexible architecture, and the phone bill for the district office alone was exceeding \$30,000 per month. "We were paying Verizon for Centrex, plus the GSA [General Services Administration] was taking its cut," says Robert Hall, coordinator of voice and data communications for Huntington District. "It was really eating us up."

So was the time it took to get the phone company to make any changes. The average wait was two weeks, and some were much longer. Huntington District decided to install its own ISDN PRIs from a competitive carrier and find a phone system that could be managed internally.

An upgraded TDM infrastructure was soon rejected in favor of a converged platform using IP telephony. Huntington District evaluated VoIP solutions from Nortel and Cisco before selecting the ShoreTel system because it was significantly less expensive and much simpler to implement and manage.

"As you configure a Cisco system, it gets very complex very quickly," observes Huntington District computer specialist Anthony Estep. "That was a huge factor."

Another key factor was the rural nature of Huntington District's territory. Most of the field offices are in remote areas where the local communications infrastructure is not exactly state-of-the-art.



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“If we can get the reliability of a standard telephone line and still install this kind of VoIP system—extremely reliable, simple to use, and easy to configure, install, and support—it's a win-win situation,” explains Estep.

## **OPERATION VoIP BEGINS**

Huntington District began its VoIP migration at the beginning of 2003 by moving the IT group to the ShoreTel voice system. This pilot, involving a single ShoreGear switch, convinced the organization to convert its entire district headquarters facility—some 630 phones—to ShoreTel VoIP.

“We changed out the phones during business hours, taking an average of about 5 minutes per phone user,” recalls Hall. “In an office with 30 people, we were usually done by noon. The installation went even more smoothly than we expected, and just about everyone in the building commented that it was the most painless upgrade we've ever done.”

The implementation teams had four people: One did the computer work, two installed the phones, and a fourth was charged with moving the wiring closet connections from the legacy key computer lines to the ShoreGear boxes. The team started at 8 a.m. and by lunch time was usually ready to pull the old connection and plug in the new one. The installation was completed with in-house personnel, and did not require any outside contract support except for an occasional call to ShoreTel. Most of the calls to ShoreTel were mainly feature questions, and few technical calls were need.

In fact, the biggest problems were tracing the existing wires, pulling the legacy systems, and doing all the paperwork that canceling the old ISDN lines required. Through the headquarters implementation experience, Huntington District developed a well-oiled process that is being further refined for doing new field office installations.

The process was put to the test when a lightning strike damaged the old system at one of the field sites and left it barely usable. The office was moved to the top of the ShoreTel migration list.

“In our environment, communications are our top priority,” states Estep. “If we have a catastrophic event, we can be on site and put in a new system in a day. That is phenomenal.”

Due to funding limitations it is possible to upgrade only a few sites each year. Because most of Huntington District's sites are located near bodies of water, and are heavily prone to lightning strikes, the IT team has developed an emergency installation kit, including ShoreTel phones and switches, for situations requiring an immediate response. If a call comes in at 8 a.m., team members are on-site with all necessary equipment by noon and start tracing lines and plugging things in. If necessary, the first phone can generally be up and running inside of two hours. Similarly, a site with legacy voice system can be upgraded and cut over to ShoreTel in as little as two business days.

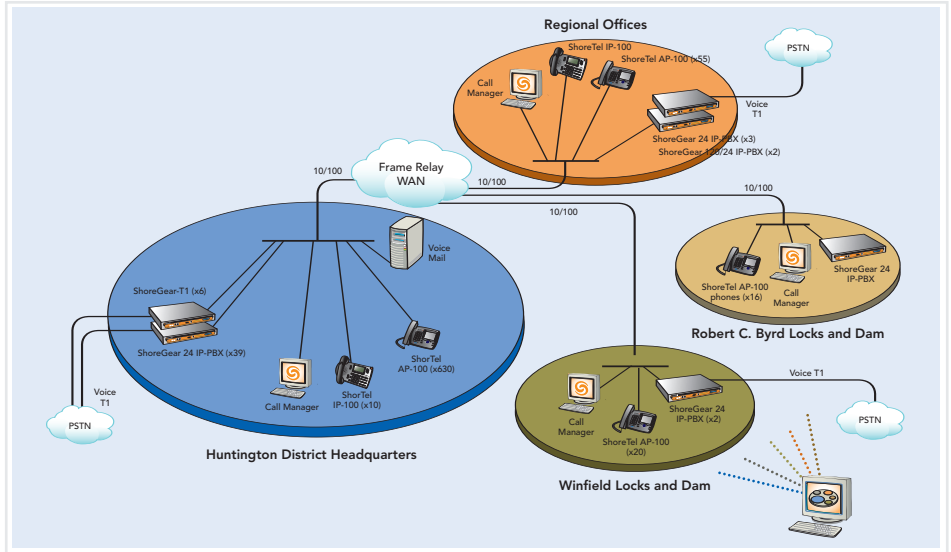
The ease of implementation has the Huntington District IT team wondering just what has been taking the traditional telecommunications carriers and vendors so long and costing so much all these years.

“It doesn't have to be so complex,” concludes Hall. “The ShoreTel VoIP system is incredibly easy for us to administer, and we make changes on the fly all the time.”



## THE NEW INFRASTRUCTURE: A WORK IN PROGRESS

Huntington District uses ShoreGear 120/24 switches to provision desktop connections. Externally, ShoreGear T1 switches to connect to six PRIs-five for local access and one for long distance. An Adtran Atlas ISDN switch allows the voice PRIs to be shared with multiple Polycom video teleconferencing systems.



U.S. Army Corps of Engineers deployed ShoreTel to 9 locations with 822 phones.

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Coordinator of Voice and Data Communications

The district office keeps voice and data on separate LANs, using Enterasys Ethernet switches. The ShoreWare server and all ShoreGear switches plug into the main Ethernet backbone switch. It is on the middle floor of the building and linked via fiber to a second Ethernet switch on the first floor. This switch is attached to Huntington District's main Cisco WAN router, which has DS-3 ports providing access to a frame-relay WAN.

In the field offices, each housing 8 to 18 people, voice and data traffic share the same LAN. These remote LANs are based on unmanaged NetGear 10/100 Ethernet switches attached to Cisco WAN routers that connect to the district office via the frame-relay WAN, which did not have to be upgraded to accommodate the voice traffic.

About 850 users across the District are now on IP telephony, but most of them are still using traditional analog telephone sets.

"Once we saw how smoothly the PC Call Manager client software worked with the AP-100 analog phones, we decided that was more than enough for most of our users," says Estep. "This enabled us to realize additional cost savings." There are about 15 IP phones throughout the network being used for special purposes, and the plan is to expand the IP phone population gradually.

IP phones are sometimes the best solution when there are no existing copper pairs running between two buildings that are being networked together via fiber.



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Seven of the permanent remote facilities have now been migrated to ShoreTel IP telephony, along with the floating repair fleet. Like the regular remote facilities, the repair fleet has its own routable addresses and Cisco router, but 802.11b wireless technology provides the ship-to-shore WAN link. Wireless access points are set up at each lock and dam site where the fleet docks, providing direct connection to the main network and all services, including voicemail. Permanent phone numbers are assigned to staff members, following wherever the fleet goes so they don't have to borrow spare phone lines at each docking location.

“At one point we considered just deploying IP phones on the fleet,” recalls Estep. “However, installing a subnet with a ShoreGear switch and analog sets seemed like a better solution. It enables us to add phones more easily and without using up valuable IP addresses.”

Using the old TDM infrastructure, Huntington District had to run a hard wire from the boat to a phone line at the site it was servicing. Heavy equipment is often being moved around in these busy, floating industrial repair shops, and the cables were constantly being cut or damaged.

Some of the field offices are still served by legacy voice systems, but Huntington District's VoIP migration continues, and three more sites are slated for upgrading in the near future. As the legacy equipment wears out or requires significant maintenance, it is being replaced with the ShoreTel platform.

## **PRODUCTIVITY GETS A BOOST**

ShoreTel's award-winning Personal Call Manager application basically puts a PBX on everyone's desktop, and represents a completely new telephony paradigm for users. The interface is so intuitive and its benefits are so obvious that Huntington District's employees are having no trouble with the transition. Virtually everyone in the district office is now using the PCM, and people in the field are quickly following suit.

For one thing, people can see who is calling and use the information and the point-and-click interface to prioritize call handling.

“You can put a vendor on hold and take the Colonel's call,” says Hall. “You don't keep the commander waiting. And you can also conference in third parties on the fly whenever they can enhance a conversation. This really adds to our productivity.”

Huntington District has been making extensive use of ShoreTel's collaboration capabilities, and is in the process of upgrading its workgroups to the new hunt groups offered in ShoreTel5 Release 2.

Collaboration and communication are further aided by ShoreTel's built-in Converged Conferencing bridge, which provides a more convenient and cost-effective forum than the conference service provider Huntington District used to employ. Certain groups have permanently scheduled conferences, and the use of such virtual meetings is spreading.

Now ShoreTel5 Release 2 supports six-line conferencing from the desktop, smaller conferences can be offloaded from the bridge. Huntington District is also starting to exploit ShoreTel Converged Conferencing's document-sharing capabilities. Some groups have been sending slides



around in advance of their conferences, but integrated data sharing is a more efficient solution that also keeps the voice and data input synchronized.

The fleet engineers are based in the district office, but they spend a lot of time out in the field working on repairs. With the ShoreTel IP telephony system, they simply log in to the network from anywhere, and their calls find them as if they were sitting at their desks in Huntington. The same applies to the IT staff.

“Bob Hall uses a softphone in field, redirecting his DID number to his laptop,” says Estep. “No matter where he is, even if there is no ShoreTel system locally, he has a phone as long as his laptop is connected to the network,” says Estep. “With thinner budgets and fewer dollars for hiring contractors to install cabling and fix equipment, we are spending more time in the field than we used to, and the softphone helps us get the calls we don't want to miss.

“We are now considering softphones as a temporary solution when extra phones have to be added at field sites during emergency situations. This works particularly well for individuals in the district headquarters who are temporarily relocated to the field during such events.”

## USER-DEFINED CALL HANDLING

All of Huntington District's mobile employees can use the PCM to set up their own call-handling modes. Calls can be immediately forwarded to temporary desks or cell phones or home phones, without contacting the GSA or Verizon and requesting-and then waiting for-the change.

This illustrates a fundamental difference between traditional telephony and VoIP: Phone numbers are associated with people, not devices at particular locations. Staff members based on the mobile repair fleet can have permanent phone numbers, and their calls automatically follow them as they move around.

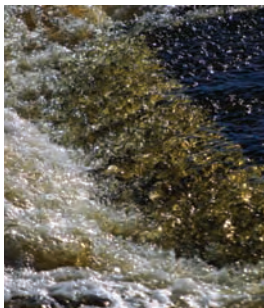
ShoreTel's Outlook integration further eases call-handling changes. When a call comes in, the ShoreTel system can make routing decisions based on the intended recipient's Outlook calendar and various individually defined call-handling options. Calls that go unanswered when the user is scheduled to be in the office typically bounce to voicemail, but other options include forwarding to an assistant or colleague.

Similarly, users can set up handling options for calls that arrive when their calendars indicate an out-of-office mode.

There is also a custom call-handling mode that can be used to meet more extemporaneous needs. Individuals who suddenly realize they are going to be away from their desks for awhile can simply flip the call-handling mode to custom and have calls automatically transferred to cell phones, for example.

Huntington District's office users like the extra functionality and efficiency they get from the PCM, and the single distributed system that lets them do 4-digit dialing across sites. The obvious benefits of the ShoreTel system are also appreciated by the operations and construction people who have to set up temporary field sites.

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“They can't see why we'd want to set up a field office with anything else,” reports Hall. “If a phone system needs to be installed, it will be ShoreTel. That's the current policy. You buy what works and gives you good value for your money.”

“The overall economics and manageability of this system are unbelievable. When you hear someone describe this technology, you say, 'Show me-it can't be this good.' But it is.”

## **QUICK ROI**

Installing a new phone on a legacy phone system would cost the District hundreds of dollars and impose an average two-week delay. In contrast, a new ShoreTel phone can be installed in minutes, and doesn't require a phone systems provider's truck roll to the site. Huntington District no longer has to depend on an outside party and then wait days or weeks for a simple change that actually takes a few minutes.

Additional savings come from toll bypass. The region spans multiple LATAs, and about 80% of the long-distance calls made by the field offices are going to the district headquarters in Huntington. These interoffice calls now ride the IP WAN for free, bypassing the long-distance carrier networks and reducing recurring monthly costs.

Estep and Hall reckon the new IP telephony system has reduced recurring monthly costs by 70%. An up-front cost-benefit analysis led them to expect a 2-year return on investment, but the ShoreTel system paid for itself inside of 18 months. They also discovered they can install a ShoreTel system in a field office for about half of what a Nortel, Cisco, or Avaya VoIP solution would cost.

“That has freed up money we can now use on other things,” sums up Estep. “This system lets us do more with less. In this time of tight budgets, I don't know why more organizations aren't implementing a ShoreTel-type solution.”

The Huntington District's IT team and users continue to plumb the depths of the ShoreTel VoIP system and exploit more and more of its features. Once the basic migration is completed, they look forward to additional integration of voice and data, and the advanced applications that IP telephony enables.