CPS Energy Strategizing the Future of Utility

UTILITY CONFRONTS THE NEXT GENERATION BEYOND EXISTING WIRELESS AND IT SYSTEMS

BY J. SHARPE SMITH

CPS ENERGY NEEDED A MOBILITY STRATEGY. THE UTILITY’S EXISTING SMARTNET AND DATATAC SYSTEMS WERE NEARING THE END OF THEIR USEFUL LIFE, AND THEY NEEDED A REPLACEMENT SYSTEM. INSTEAD OF MERELY REPLACING THE WIRELESS SYSTEM, CPS, WHICH SERVES MORE THAN 600,000 ELECTRIC CUSTOMERS AND MORE THAN 300,000 NATURAL GAS CUSTOMERS IN AND AROUND SAN ANTONIO, USED THE SITUATION AS AN OPPORTUNITY TO CREATE AN OVERALL MOBILITY STRATEGY.

TODAY, MANUFACTURERS ARE GETTING INVOLVED EARLIER IN THE PROCESS IN AN ADVISORY CAPACITY TO HELP CUSTOMERS WITH THE THOUGHT PROCESS THAT GOES INTO PLANNING WIRELESS SYSTEMS.
Owned by the City of San Antonio since 1942, CPS Energy is the second largest municipal-owned utility in the nation. It began the planning process by hiring the San Antonio-based consulting firm Karta to create a mobility-needs document and then hired Motorola to create a mobility architecture and roadmap that met the needs documented in the Karta report.

Karta interviewed personnel in the major CPS business units. Mobility needs were identified and summarized into 10 major goals. CPS also agreed to be a beta test for Motorola’s Seamless Mobility Maturity Assessment, which identifies gaps in a customer’s current infrastructure that have to be closed to meet their goals for seamless mobility. Motorola also performed an IP network assessment of the CPS Energy IP network.

“Through the Seamless Mobility Maturity Assessment, we first identified the mobility requirements based on their mobility goals. We assessed their current capabilities from a mobility perspective and based on what it would take to meet those goals, we identified the gaps,” says Chuck Roark, Ph.D., director, Business Development/Solutions Architecture, Motorola Network and Enterprise Services.

The result was a 70-page report that described their current architecture, made high-level recommendations for future architecture and provided a set of migration steps between the two.

“We used those goals as established by Karta as a basis for our gap analysis and our architecture recommendations to meet those goals. Motorola spoke with representatives of multiple divisions to get the answers we needed,” says Roark.

Utilities Structures Provide Communications Challenges
Because of the growing role of IP in new and evolving wireless systems as well as workers’ needs for unfettered access to information, IT-related issues not solely related to mobility weigh heavily on the ability of mobile workers to communicate in utilities.

The IT structures that exist today, however, follow the pre-existing corporate structures that exist in utilities’ the util-
ity businesses. In general, utilities’ organizational structures are divided into three silos: customer service, generation and distribution. The mobile technologies used by field workers and management as well have developed over time around those divisions.

“The interplay of information across existing silos is becoming more and more important to delivering a level of service to the customer and providing differentiated services. These silos have to come down at some point,” says Paul Lanci, director, Motorola Seamless Mobility Practice.

Today, manufacturers are getting involved earlier in the process in an advisory capacity to help customers with the thought process that goes into planning wireless systems. The interdependence between IT systems and mobility applications demands that communications planning be a much more holistic process.

“In the old days, a utility would have simply put out an RFP for a wireless network, but today’s customers are much more strategic in their thinking,” says Lanci. “What is different today is the use of Internet Protocol. While IP is creating many opportunities for mobilization of a workforce and ease of access to information, it is also creating a set of complexities around matching the right technology with the right user requirements and applications.”

The Pluses of Planning
The Karta and Motorola assessments are serving to help CPS Energy’s Information and Communications Services (ICS) to better serve the utility’s generation business unit, known as Energy Development, and distribution business unit, known as Energy Delivery and Solutions. Given the business units’ ability to outsource communications, it is all the more important for ICS to know their information needs.

Mark Lampe, senior director, Communications Systems and Infrastructure, calls the Karta and Motorola reports “very enlightening” because management can use them to be on the same page in terms of long-term goals. “These reports also give us the ability to talk confidently with our customers and the business units and to prove to them that we are the provider of choice,” says Lampe. “We can paint them the roadmap and let them know that if they partner up with us, we can get them where they want to go.”

“It is advantageous for us to see both the near-term goals of the business units and the state of the art that we can aim for,” says Scarlett. “We want to solve immediate needs without painting ourselves into a corner.” The long-term direction of CPS, according to Scarlett, is enabling each employee to access to any needed information so they can do their job wherever they are in the service territory.

Karta Report Illuminates Short-term Priorities
What did Karta uncover as CPS Energy’s mobility goals? At the top of the list was providing reliable voice communications, ensuring robust mobile work order manage-
For example, energy generation employees want to create work orders on the spot when they notice safety issues as they do their rounds at the plant.

Another priority was remote access to GIS (Geographic Information System) maps and drawings. An example of this need involves the GIS office application for automated services and facilities design, which is being rolled out by Energy Delivery and Solutions. The business unit now wants to mobilize access to the client, so workers can do design work in the field. Since they can’t send the GIS maps to the mobile data terminal over the current data network, this would demand high-speed data throughput only available from AT&T’s high-speed cellular data network.

Additionally, automated time sheets and fleet management and asset tracking made the list of main concerns. The prioritization of automated time sheets was an eye-opener. “The manual system is a big pain point that didn’t show up on anyone’s radar screen,” says Scarlett. To meet those expectations, CPS is piloting a system with GPS devices and on board diagnostics in 21 trucks, which will automatically enter a time code when a truck enters a worksite.

**Mobility Priorities for CPS Energy**

1. Provide reliable voice communications  
2. Ensure robust mobile work order management  
3. Provide a scalable wireless data network  
4. Match devices and solutions to job requirements  
5. Provide remote access to drawings and GIS maps  
6. Provide remote access to digital images, acquisition and storage  
7. Provide remote access to data sheets and historical information  
8. Automate timesheet management  
9. Enhance metrics to drive business results  
10. Provide fleet management and asset tracking

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The Harmony wireless system, which has been deployed at the power plant facilities and is now being expanded throughout the service area. It is scheduled to be completed in third quarter 2008, at which point will begin the shutdown of the SmartNet system.

Previously, communications services and IT were divided into two camps according to their use of analog and digital technologies, respectively. With CPS upgrading the entire communications network to digital technology, the two areas will soon speak the same language. Going from analog to digital also allows CPS the flexibility to integrate voice and data, which will open the doors to centralize system management.

“The concept that came out of the Motorola assessment was to look at central management programs to handle both IP environments,” says Scarlett. “This represents some exciting opportunities organizationally. In the future, we could cross train employees in different support services so could present a single IP network to our customers.

Another step toward network convergence is to establish a network operations center for 24-hour monitoring of both communications and information technology networks. Monitoring the networks would allow the utility to be more expeditious in solving system outages and more vigilant against security breaches.

“With all the systems we have out there, it would really be great if we could manage all of these systems—wired and wireless—with a common infrastructure, much like we manage our electric and gas distribution networks” says Scarlett. “There would be people monitoring the situation and identifying problems proactively. Rather than waiting for a user to complain that a network is down, we would have already determined the cause and dispatched people to solve the problem.”

Access to Public and Private Networks
The inclusion of public providers in CPS Energy’s communications portfolio will allow it to give the business units more options to choose from based on their bandwidth, coverage and reliability needs. Scarlett would like to use a blended approach to public and private networks, where it wouldn’t matter to the user when he or she was using an AT&T network or a CPS-provided network.

“We want a router traffic cop making decisions concerning which network carries the information,” says Scarlett. “Depending on the priority of the information and the needed bandwidth, the packet of information would be routed through the proper network.”

An example of how broadband could be deployed incrementally is utilizing Wi-Fi coverage to upload the latest GIS maps to the trucks in the yards at the service centers. The next level would be to provide access to those GIS updates out into the field by placing Wi-Fi hot spots at substations. Helping this effort is the embedded fiber optic network that connects all of CPS Energy’s substations.

“[Seamless network access] is a big elephant to swallow right away,” says Scarlett. “We must take the initial steps to deploy technology today that will support our future vision.”

Mobile Technology Council Takes Tech to the Frontlines
Complementary to the planning process at the management level, a research and development lab, the “Center for Excellence,” has been established in the field to place new technologies directly into the hands of the workers. The center is the handiwork of the Mobile Technology Council, which is made up of Scarlett, Lampe and other officials in communications and IT from the corporate and business units.

The center is a proving ground for getting technologies such as mobile hotspots, mobile virtual private networks, ruggedized handhelds and barcode readers out into the field to see how they work in the utility’s environment. For example, the company is piloting an SAP-enabled mobile work order application for gathering fleet fueling information in the field.

“While strategic assessments help management and senior management, this takes it straight out into the field and puts it into the hands of the users,” says Lampe. “I support this process because it is bringing us together. If we get both departments and teams speaking the same language, it will make sure there are no misunderstandings or misconceptions.”

CPS Energy’s long-term plan, like many utility, enterprise and government users, is to run all of its wireless and information technology systems on its Ethernet network. This will open the door to converging multiple data networks into a seamless system.

But the question for users, who have legacy systems, is how do you get them from here? The answers lie in establishing short-term and long-term goals, assessing current infrastructure status and charting a course of intermediate steps to achieve their goals. Assessments, like the ones that Karta and Motorola did, are critical in helping communications and IT personnel to lead their companies through the changes necessary.

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