

Maritime Port Lowers Wireless Network Costs While Improving Coverage

The South Carolina State Ports Authority (SCSPA) is known for taking the lead in embracing enabling technologies for the maritime port industry. In fact, as chair of the IT committee for the American Association of Port Authorities, SCSPA's CIO makes technology recommendations for all U.S. maritime ports. As SCSPA's wireless network reached its end of life, the ports authority seized the opportunity to replace the old solution with one that offered more robust performance and coverage.



The SCSPA owns and operates public seaport facilities in Charleston and Georgetown, including one of the largest maritime ports in the United States, which in 2009 moved nearly 750,000 standard shipping containers. SCSPA depends on a robust wireless network to track shipping containers, which are constantly being processed through the container yard.

“Because of the shifting canyons created by constantly moving metal containers, obtaining reliable wireless coverage is a major challenge in a maritime port,” says Pam Everitt, CIO, South Carolina State Ports Authority.

Since initially installing wireless in the container yard in 1999, SCSPA had been evaluating various wireless solutions before discovering Fidelity Comtech's Phocus Array™ System. SCSPA chose Fidelity Comtech Inc.'s Phocus Array™ 3100X for its patented Flexible Vector Modular Technology (FlexVMT™). FlexVMT™ enables a low cost, low power, extended-reach access point that dramatically increased SCSPA's return on investment by reducing cost of ownership and deployment.

Better Coverage at Lower Costs

The majority of cost in a wireless network is in the poles and network infrastructure used to mount the access points. A single pole, including power and network connection, can cost up to \$100,000. This is because the pole must be sturdy enough to withstand a hurricane or a collision with a tractor-trailer; often the pole will penetrate as deep into the ground as it rises above the ground.

The Phocus Array™ provides increased reach compared with previous systems, meaning the poles can be spaced farther apart. This in turn means that less access points– and poles – are needed to cover the same area. Also, each of SCSPA’s previous access points covered only up to 120 degrees, requiring three access points to achieve the 360 degree coverage provided by a single Phocus Array™.

Based on FlexVMT™, the Phocus Array’s™ circular eight-element antenna has a variable target footprint ranging from a standard 360 degree “super” omni-directional pattern to an extended long-reach focused 43 degree co-phase pattern. The impact in the port industry is that fewer access points are necessary to achieve optimal RF coverage. On average, an RF system designed with the Phocus Array™ will require one seventh the number of access points as the competition. Fidelity Comtech was able to replace SCSPA’s 15 plus access points with 8 Phocus Arrays™, compared to over 50 proposed by a competitor. The cost impact to SCSPA of choosing Fidelity Comtech was a savings of over \$1 million in pole and infrastructure costs.

“At first the cost-savings seemed too good to be true. But once we tested the product and found that fewer Phocus Arrays™ delivered the same coverage with less hardware, the decision to go with Fidelity Comtech was easy to make,” says Everitt.

Small Form Factor Eases Installation and Maintenance Efforts, Costs

Installing 8 access points instead of over 50 obviously streamlines the installation process, but the Phocus Arrays™ further simplify installation and maintenance with their small, lightweight form factor. SCSPA’s old access points each weighed 40 to 50 pounds and were three feet wide by four feet long. It took two people working for several hours to install or replace an access point in the old system. And as the system aged, it became more and more unreliable, increasing the maintenance cost of the RF network.

The Phocus Array™, on the other hand, weighs just nine pounds and can easily be carried under one arm. It is also intuitive to set up. SCSPA installed the Phocus Arrays™ themselves after an on-site demo and training provided by Fidelity Comtech’s engineers.

“The installation cost of the Fidelity Comtech system was the lowest of all the vendors we considered. Plus, it only takes one person a half hour to configure each Phocus Array™ after it is installed on the pole,” says Everitt.

Reliable Coverage that Changes with the Environment

The same technology that enables the Phocus Array's™ "super" omni 360 degree coverage – FlexVMT™ – also enables shaped RF beam coverage, which is exactly what SCSPA needed to accommodate its ports where the coming and going of shipping containers create a constantly changing metallic environment. Unlike omni-directional technology, which blankets RF coverage in a small, static circle around the access point, Phocus Arrays™ feature dynamic beamsteering technology. This allows SCSPA to focus the coverage footprint where it's needed, thereby increasing signal range and improving network performance. The beam can also be electronically adjusted along the continuum between a high gain directive pattern and an omni-directional pattern after it is installed.

The Phocus Array™ system has been deployed operationally for three years and continues to meet SCSPA's demanding wireless network needs. "We are excited about a wireless network that can adapt to our constantly changing environment to improve coverage. I believe Fidelity Comtech's technology will have broad appeal to marine ports everywhere," says Everitt. "For our planned expansion, we are confident in our long term partnership with FCI to continue to provide the support and performance we need to keep our competitive edge in the shipping industry."

About Fidelity Comtech

Since 2001, Fidelity Comtech, Inc. (FCI) has been the premier provider of RF amplifiers and antennas to commercial and government end customers, system integrators, and original equipment manufacturers (OEMs). Our customers use our products in security, ultra-high mobility, mobile network, mobile asset tracking and management, and data wireless local area network (WLAN) applications. Located at the base of the Rocky Mountains in Longmont, Colorado, Fidelity Comtech designs, manufactures, and Services products for our customers from amplifiers and antennas to complete system products like the Phocus Array™ System family of wireless access points and routers.