BATS Ship-to-Ship Case Study

Background

A customer with a fleet of ships asked Global Forte, a high tech product and consulting company, if it had an economical solution to fulfill their need for high-speed communications connectivity for ship-to-ship and ship-to-shore operations.

Global Forte recommended the **Broadband Antenna Tracking System's (BATS)** BTS-3300 System integrated with Redline Communication's 5.8 GHz AN-80i radio that utilized a two-foot grid antenna.

Customer Challenge

For the purpose of the demonstration, to maintain a high-speed wireless connection for several hours between two ships moving at speeds of up to 13 knots and at a distance of up to 12.4 miles (20 km).

BATS Solution

A live demonstration was set for late June 2009 in the Sea of Marmara (major waterway linking the Black Sea and the Aegean and Mediterranean seas via the Bosporus and the Dardanelles).

Integrated with Redline Communication's AN-80i, the **BTS-3300 system** with pan-tilt chasses was mounted on the main mast of two ships (16 meters above sea level). Two scenarios were demonstrated:

Scenario A – One ship was moving at 2 knots and the other at 13 knots, the ships **did not criss-cross or turn**. Global Forte successfully demonstrated camera surveillance broadcasting and Internet telephone communications between the ships. The maximum distance achieved was 24.6 miles
(44.3 km), more than doubling the customer's requirements or expectations. The receive signal strength indicator (RSSI) hovered around -50 when the distance between the ships was less than 12.4 miles (20 km). and -60 between 12.4 – 24.6 miles (20 – 44.3 km).

Scenario B – Two ships **did criss-cross and turn** while the BATS directional antenna system was able to create search patterns and predictive algorithms to automatically locate, establish and track communication of the broadband wireless units on both ships. The applications ran successfully with high throughput and low latency.

Global Forte

Redline communications

"This was an impressive demonstration conducted on a very choppy sea. Customer's initial testing was very positive and went much better than expected."

"Since the customer was satisfied with the ship-to-ship results, it did not see any need for the ship-to-shore tests"

Han Mutlu, CEO
Global Forte

The BATS systems quickly locked in and were able to track each. The applications ran perfectly with a stable bandwidth of 4.5Mbps and a maximum latency experience of less than 5 milliseconds.

Dino Bakakis, Managing Director, Middle East
Redline Communications

Maritime Deployments

Wireless communications over water have unique challenges. Water can adversely reflect radio waves and can have a direct impact on reliability. Environment conditions such as saltwater, high humidity, temperature and barometric pressures can radically attenuate radio signals.

About Broadband Antenna Tracking Systems

Broadband Antenna Tracking Systems (BATS) provides a proprietary software and hardware platform that locates, locks and tracks wireless broadband communication access points. Our products are designed for quick deploy communications centers and mobile to fixed and mobile to mobile vehicle communications. BATS was founded by three information technology professors and researchers from Purdue University in West Lafayette, Indiana. For more information, please visit www.batswireless.com.

Locate, Optimize and Track Wireless Connections

This first-of-its-kind technology integrates a directional antenna system that is mounted on a pan-tilt aiming chassis with a wireless broadband radio. The integration, along with the performance characteristics of the directional antenna, create search patterns and predictive algorithms that automatically locate a desired connection point, establish communications and track one or both of the wireless broadband radios.

BATS Technology

- Is a cost-effective communications solution compared to satellite or other alternatives
- Quick return on investment. Provides significant cost savings with the elimination of man-hours associated with manual redirection
- Supports and enhances any wireless communications system or vendor equipment
- Is agnostic as to frequency and broadband vendor radio equipment.
- Rapid deployment or extension of a wireless network
- Allows for moving vehicles on land, water and in air to access critical broadband communications resources such as data, voice over Internet protocol (VoIP) and streaming video
- Solves the unique problems resulting from limited technical resources in the deployment of wireless networks, applications requiring manual antenna alignment, or applications when frequent antenna realignment is required due to natural causes or equipment movement
- Provides continuous optimization for maximum throughput

BATS
EXTENDING BROADBAND