



## A New Ship has Come in for Innovative Seaport Operations: Wireless Broadband

Global seaports, like other industries, need to innovate to stay competitive. Greater operational efficiencies translate directly into financial strength and viability. The implementation of advanced applications – driverless vehicles, remote cargo monitoring, video surveillance, GPS, RFID – requires a reliable and robust network infrastructure. Increasingly, wireless broadband solutions are providing the needed bandwidth to help achieve network objectives in one of the most difficult RF environments in the world.

### **Ports are Vital to the Global Economy**

*The United Nation's Conference on Trade and Development concludes that 80 percent of all worldwide trade is shipped via cargo containers. Each day, more than 27,000 containers arrive at U.S. seaports.*

– Gartner, Inc.

### **A Tough Network Environment**

Port operations pose significant challenges for RF infrastructures. Common issues to navigate include signal interference and high noise floors, multi-path conditions from constantly changing container stack configurations and interoperability challenges from existing communications systems and devices. Signal propagation is further complicated by the combination of quay cranes, containers and other machinery, which can lead to varying RF canyons.

### **Making Communications Work**

Despite the inherent complexities in the port environment, the ability to efficiently manage multiple ships concurrently with growing levels of cargo remains paramount. Equally important is the ability to communicate reliably throughout the port, monitor equipment and control vehicles safely and securely. What does it take to achieve all of these critical objectives? A sound, scalable and robust network infrastructure.

A European port recently selected the Motorola Mesh Wide Area Networks Solo (6300 series) solution to

ensure the seamless and reliable operation of its driverless vehicles and provide the needed redundancy to its fiber-driven cranes. The Wireless Broadband Solution also delivers the necessary bandwidth for the deployment of other advanced mobile data and security applications. To enable a singular view and control point for the entire system, the port implemented Motorola's One Point Wireless Manager, one tool in the One Point Wireless Suite – a powerful set of software solutions that help customers design, deploy and manage their indoor and outdoor wireless networks.

### **An Industrial Strength Option**

The Motorola multi-channel Solo network, with Mobility Enabled Access (MEA), is the ideal solution for industrial networks and is specifically designed for reliable performance in high interference mobile environments. With Opportunistic Radio Link Algorithm (ORLA), Solo enables faster route convergence and recovery and improves throughput by

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## MOTOROLA WIRELESS BROADBAND

(continued from front)

maintaining a high packet completion rate. Motorola's Solo networks also have the added protection of standards-based security features for meshing links to include PSK and EAP-TTLS. Additionally, every Solo client radio acts as a router with full meshing capability. The end result is a network which is strengthened and extended with every additional MEA subscriber device, providing RF links into the 'canyons' created by stacked containers.



The American Recovery and Reinvestment Act of 2009, provides significant new funding for transportation infrastructure initiatives. Key grants having positive implications for ports include:

State Highway Program (Surface Transportation) – DOT	\$27.5 billion
Discretionary Transportation Grants – DOT	\$1.5 billion
Port Security Grants – DHS	\$150 million
Dredging – Corps of Engineers	\$4.6 billion
Electrification Grants – DOE	\$400 million
Diesel Emissions Reduction – EPA	\$300 million
Grants for Assistance to Small Shipyards – MARAD	\$100 million

For additional information, visit [www.aapa-ports.org/issues](http://www.aapa-ports.org/issues) or [www.recovery.gov](http://www.recovery.gov).

### Managing the Network Indoors and Out

Network management is a critical capability for operators of any deployed network, but particularly for those in RF hostile, industrial environments. Scalability, monitoring, control, auto discovery and reporting are key considerations when evaluating options. Motorola's One Point Wireless Suite delivers all these capabilities and more in a single control point for indoor and outdoor wireless broadband equipment (WLAN, Mesh, Point-to-Point (PTP) and Point-to-Multipoint (PMP)). It gives network operators an easy-to-use map-based view of network performance using an embedded Google Earth environment.



**MOTOROLA**

[www.motorola.com/wirelessbroadband](http://www.motorola.com/wirelessbroadband)

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### Ensuring Smooth Sailing

Despite the current economic climate, today's seaports remain global economic powerhouses. Their unique environments, however, pose equally unique communications challenges that require innovative solutions. Communications, while difficult, are paramount to virtually every aspect of port operations. Additionally, to ensure competitive strength and financial viability, port IT managers must make strategic technology and network investments that provide the flexibility and scalability to accommodate greater interoperability, data, security and efficiency requirements. Their ability to thrive depends on it.

#### WORLD PORT RANKING – 2007

##### TOTAL CARGO VOLUME THOUSANDS OF TONS

RANK	PORT	COUNTRY	MEASURE	TONS
1	Shanghai	China	metric	561,450
2	Singapore	Singapore	freight	483,616
3	Rotterdam	Netherlands	metric	401,181
4	Ningbo	China	metric	344,000
5	Guangzhou	China	metric	343,250
6	Tianjin	China	metric	309,460
7	Qingdao	China	metric	265,020
8	Qinhuangdao	China	metric	248,930
9	Hong Kong	China	metric	245,433
10	Busan South	Korea	revenue	243,564

##### CONTAINER TRAFFIC TEUs - Twenty-Foot Equivalent Units

RANK	PORT	COUNTRY	TEUS
1	Singapore	Singapore	27,935,500
2	Shanghai	China	26,150,000
3	Hong Kong	China	23,999,000
4	Shenzhen	China	21,099,100
5	Busan	South Korea	13,254,703
6	Rotterdam	Netherlands	10,790,604
7	Dubai Ports	UAE	10,650,000
8	Kaohsiung	Taiwan	10,256,829
9	Hamburg	Germany	9,917,180
10	Qingdao	China	9,462,000

Sources: Shipping Statistics Yearbook 2008 U.S. Army Corps of Engineers, Waterborne Commerce of the United States CY 2007, AAPA Surveys

### About Motorola Wireless Broadband

Motorola's Wireless Broadband and our WLAN solutions provide and extend coverage both indoors and outdoors. The Motorola Wireless Broadband portfolio offers high-speed Point-to-Point, Point-to-Multipoint, Mesh, Wi-Fi and WiMAX networks that support data, voice and video communications, enabling fixed and mobile applications for public and private systems.