THE NEW YORK CITY SUBWAY SYSTEM
IMPROVES PASSENGER SAFETY AND EMERGENCY SERVICES WITH MOTOROLA WLAN TECHNOLOGY

MOTOROLA AP 7161 POWERS WIRELESS HELP POINT UNITS

CUSTOMER PROFILE

Company
New York City Metropolitan Transportation Authority (MTA)

Industry
Travel and Transportation

Application
Emergency and information services in subway stations

Solution
Boyce Technologies, Inc. AP 7161-enabled Help Point Units

Benefits
- Increased passenger safety
- Increased passenger satisfaction
- Reduced maintenance time and cost
- Investment protection — upgradable

The New York City Metropolitan Transportation Authority (MTA) is one of the largest subway systems in the world, and keeping its more than one billion subway passengers in 468 stations safe is a top priority, along with ensuring that passengers can get the information they need, when they need it. The existing system that allowed passengers to report an emergency or request information was outdated, difficult to scale and required frequent repairs. The MTA embarked on an initiative to overhaul this passenger help system by inviting numerous vendors to develop the ideal solution, including Boyce Technologies, Inc., which utilized Motorola Solutions AP 7161 outdoor access points to create the winning solution — a wireless Help Point Unit that delivers high quality voice, easy deployment, centralized management, infinite scalability, the rock solid wireless network performance required in a public safety solution and a rugged housing.

"*The AP 7161 was the perfect choice. This remarkable device is rugged enough to handle the demanding subway environments in the tunnels and out on the platforms. Its dual band unlocked radios provided the flexibility we needed to serve two very different communication paths — emergency and information requests. And it is loaded with features that deliver the dependable performance and high-availability required in a public safety application, while providing the speed required to support new capabilities to increase security, such as optional IP-based surveillance cameras.*"

- Charles Boyce, President and CEO of Boyce Technologies, Inc.

THE BUSINESS CHALLENGE:
AN AGING PASSENGER EMERGENCY SYSTEM

The existing analog intercom system in the MTA subway stations provided passengers with two buttons — one to report an emergency situation and one to obtain answers to passenger questions. Not only was this system outdated, it was also fraught with issues — the repair rate was high, voice quality was an issue, there was no easy way to proactively monitor the health of these critical emergency communication stations to prevent equipment failure. The existing analog system was not upgradable to address these issues or to allow the MTA to leverage the new technologies of the digital world that could improve passenger safety and the delivery of information services.

THE MANY ENVIRONMENTAL CHALLENGES

To address these challenges, the MTA invited multiple vendors to create the ultimate customer assistance solution for its passengers. Boyce Technologies, Inc., a long-term MTA partner on public safety initiatives, set out to define and build a robust solution — one that would not only address the MTA's strategic business objectives, but also all of the issues with the current system, as well as the extremely demanding physical challenges of the subway station environment. Creating such a new system would not be an easy task — the new solution would need to address:

- **Power issues.** In the 100-plus year-old subway system, the reliability of "dirty" power was an issue — they needed a solution that would not be impacted by local power issues to ensure 24x7x365 availability.

- **Logistics issues:** Installing cabling presented many issues. Shutting down sections of the subway to lay new cable was a logistical nightmare that

was practically impossible. In addition, preserving the aesthetics of the buildings — such as the beautiful mosaics in some of the stations — was a requirement, adding to the difficultly of running new network cabling and installing new electrical outlets in the areas designated for the new help points.

- **Voice quality issues.** In an emergency situation, every second counts — the need to ask callers to repeat a statement could mean the difference between life and death. The solution needed to deliver crystal clear voice on every single call, despite the noise commonly present in a subway station.

- **Maintenance issues.** As one of the world's largest subway stations, the MTA needed to minimize repair and maintenance requirements to help contain operating costs.

- **Durability issues.** The MTA subway system is an incredibly challenging physical environment to deploy technology. The underground subway tunnels are very damp, often with water dripping from the ceilings due to condensation. On the platforms, the solution has to handle the dramatic swings in the New York City weather, from rain, snow and ice to extreme cold and heat.

- **Security issues.** Since the help points are installed in public areas, they are vulnerable to vandalism. The new help points would need to be ultra-secure to prevent downtime due to tampering or other malicious acts.

THE SOLUTION:
THE AP 7161-ENABLED WIRELESS BOYCE TECHNOLOGIES, INC. HELP POINT UNIT

To simplify deployment and circumvent the major issues related to running cabling and power to every help point, Boyce Technologies, Inc. knew that wireless was the way to go. Wi-Fi enabled help points would not only be much easier to deploy, they would circumvent the major issues related to running cabling and power to wired help points. The result was the creation of the Boyce Technologies, Inc. wireless Help Point Unit.

NO MOVING PARTS, VANDAL RESISTANT, LONGER LIFE CYCLE

The Help Point Unit provides the same simple two-button interface as the existing analog intercom-based system, but with a state-of-the-art Piezo buttons. Piezo buttons incorporate piezoelectric technology to convert physical touch (pressure) of the push button from mechanical to electrical energy, yielding numerous advantages. There are no moving parts, so there is virtually nothing to break and no wear and tear, providing an exceptional lifecycle – a Piezo button can easily handle tens of millions of presses. A red button that connects callers to the MTA's Rail Control Center in the case of an emergency and a green button that connects callers needing information to the MTA's Station Booth. But the similarities to the existing system end there. The analog services are replaced by wireless digital Voice-over-IP services, providing cost-effective, dependable and clear audio. Extremely reliable high performance Wi-Fi service provides the critical uptime required in a public safety application. Centralized remote management dramatically simplifies and reduces the cost of managing this solution. An upgradeable architecture provides investment protection, ensuring the units could serve the MTA with the latest features many years into the future. The unit itself was engineered for the environment — very easy to see, secure, able to handle the harsh environment and virtually indestructible and maintenance free.

The MTA chose the Boyce Technologies, Inc. Help Point Unit to replace the existing customer assistance solution. By the end of 2014, 100 stations are expected to be online thanks to the ease of installation, with the remaining stations up and running by the end of 2016 — over 6,000 Help Point Units in total.

THE HEART OF THE HELP POINT UNIT:
THE MOTOROLA SOLUTIONS AP 7161

Enabling Wi-Fi in the harsh environment of a public transit system required an industrial access point with exceptional performance, durability, features and functionality — and Boyce Technologies, Inc. found it in the Motorola Solutions AP 7161. Features that made the AP 7161 the ideal choice include:

- **Two band-unlocked Wi-Fi radios, ready to support 5 GHz and the 4.9 GHz licensed public safety band.** This allowed Boyce Technologies, Inc. to dedicate one radio to 4.9 GHz for emergency calls, and the other radio to the 5 GHz band for information requests.

- **Advanced Voice-over-IP (VoIP) functionality.** Bandwidth, speed and Quality of Service (QoS) controls combine with VoIP support to enable crystal clear voice on every call.

- **Superior wireless performance and centralized management.** When it comes to Wi-Fi performance, no other competitive device could touch the Motorola Solutions AP 7161. The unique feature set of the AP 7161 with its advanced WiNG 5 operating system include self-healing and self forming MESH capabilities via the MeshConnex™ routing engine and ORLA (Opportunistic Radio Link Adaption). Support for Wi-Fi multimedia extensions (WMM) plus 3x3 MIMO (Multiple Input Multiple Output), which provides an extremely rapid data rate up to 300 Mbps, allow the AP 7161 to easily support the most demanding applications, including voice and a real-time IP-based video surveillance system. And with powerful remote centralized monitoring, management and troubleshooting, the entire system can be controlled from the data center.

- **Industrial rated radios:** The AP 7161 is purpose-built for the most challenging environments, able to easily handle the environmental demands of subway platforms and underground tunnels. Its industrial rated components enable it to endure extreme temperatures — from -40º C to 70º C/-40º F to 158º F.

A PASSENGER ASSISTANCE SOLUTION PURPOSE-BUILT FOR THE PUBLIC TRANSIT SYSTEM ENVIRONMENT

The Help Point Unit itself was created to meet the many unique demands of a public transit system environment:

- **Virtually indestructible.** The unique outer housing is built out of extruded aircraft grade aluminum alloys making it virtually indestructible.

- **Easy to see.** A large area on the top of the unit is brightly illuminated with a unique technique that does not involve any type of light bulb, ensuring visibility and reducing power and maintenance requirements.

- **Highly secure.** The only way to gain access to the inside of the Help Point Unit is to utilize a cyber key, preventing vandalism and other malicious acts which could render the unit inoperable.

- **Maintenance free.** Since this subway system is so vast and covers so much ground, it is designed to be maintenance free — eliminating the time and cost associated with routine maintenance.

- **Modular design.** The modular design of the Help Point Unit is unique because the access point is placed behind the blue beacon to maximize the wireless signal, while also positioning the HPU for future growth, with the ability to add camera modules to the access point.

- **Upgradeable.** The modular architecture of the Boyce Technologies, Inc. Help Point Unit makes it easy to upgrade. New features are embedded in snap-in modules, which are field installable in minutes.

BENEFITS

The Help Point Unit brings numerous benefits to the MTA and any public transit environment:

- **Increased passenger safety** — the highly visible Help Point Units are easy to find, while reliable, high quality voice ensures clear communications.

- **Increased passenger satisfaction** — customers can get the answers they need, when they need them.

- **Investment protection** through the ability to upgrade with new features, such as IP surveillance cameras that can provide personnel in the data center with the ability to see what is happening in the subway stations at any time, as well as view callers and the surrounding area.

- **Low total cost of ownership (TCO)** — the Help Points are virtually indestructible and require no routine maintenance.

For more information on how you can provide your public transit passengers with cost-effective and highly reliable emergency and information services, please visit us on the web at motorolasolutions.com/wlan.

**MOTOROLA WLAN
UNLEASH OPTIMAL**

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