PIDS
by **piper**

CASE STUDY: NEW YORK CITY SUBWAY'S REAL-TIME PASSENGER INFORMATION DISPLAY SYSTEMS

Piper Networks' Passenger Information Display System (PIDS) powers the next generation of New York City Subway Countdown Clocks. The Metropolitan Transit Authority (MTA) adopted Piper Networks' Bluetooth beacon technology on over 4,000 train cars to calculate and predict train arrival information. The result is that subway riders at 269 stations on the lettered lines can now better plan their travels.

The Metropolitan Transit Authority of New York City continually seeks ways to make their system more reliable, safer for riders and improve its overall operational efficiency. In 2016, the organization started by deploying next generation countdown clocks powered by Piper Networks' proximity beacon technology. As part of an initiative to bring new LCD digital displays to the lettered platforms and station mezzanines, the program incorporates Piper's enterprise-level Bluetooth technology in select stations. In 2018, the solution was scaled to all 269 lettered-line stations and on over 4,000 train cars. Piper's proximity technology also provides MTA and leading underground wireless solution provider, Transit Wireless, with a rugged and reliable platform for detecting the location of subway trains.

There were many challenges to this project that required innovation and customization:

- Demanding, extreme environmental conditions.
- Long life battery requirements.
- Security and robust cloud infrastructure.
- Custom form factors to fit with existing locations.

"Bluetooth technology is a reliable and cost-effective option for MTA as we look to expand the deployment of the new countdown clocks within B division stations. Piper and Transit Wireless have been exceptional partners in helping us with this pilot program."

- Daniel Harding
Intelligent Transportation Lead for MTA-IT

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How it works

The innovative transit solution works by installing four high-performance Bluetooth Low-Energy (BLE) beacon transmitters on the first and last cars of each New York City subway train. As the trains pass through the stations, Piper's receivers placed within Transit Wireless Wi-Fi access points at either end of the station, pick up the signal and forward the data securely to MTA's servers. There, the data points are calculated and shared with MTA's iTrack location software to pinpoint train location and trigger the arrival information displayed on the LCD screens in the stations.

Beacon and Sensor data gets shared with MTA's servers and their iTrack Software which calculates the trains' arrival times to be displayed on the countdown clocks.

Solutions Piper Delivered

- Piper's highly responsive team and quick POC turn around resulted in a low cost IoT solution.
- A custom, high performance and secure BLE signal was developed specifically for the system.
- Piper's APIs and SDKs were integrated and used to connect applications.
- Data is mapped according to MTA Applications Team and departments' requirements.
- Custom PoE form factors were developed for high performance beacons & real-time BLE sensing receivers.
- Piper worked closely with partners like Transit Wireless to ensure interoperability.
- A custom mobile app was created for MTA field team to track and identify trains in real-time.
- The solution was implemented in a way that it will be easy to scale.

Project Updates

- Piper continues to maintain the beacon system.
- Web functionality was introduced where riders can access real-time train information online and from various apps.
- The real-time data was integrated into "On the Go" kiosks and other displays in stations.
- **There are now almost 2000 signs throughout the NYC Subway System that rely on Piper's beacon solution for real-time information and messaging.**

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