



# Case Study: New York City Traffic Management System



The [New York City Department of Transportation](#) worked with Digi and other vendors to complete a large-scale Intelligent Transportation System (ITS) project, led by AT&T. The end result is a citywide traffic system communications upgrade, including [Digi Remote Manager®](#) (Digi RM), a [Digi dual cellular router](#) at each intersection, and customized Digi software and services. The deployment required multiple vendors and over a year of planning and collaboration.



## NYC Traffic Management

NYC DOT oversees a complex urban transportation network, with 6,300 miles of streets and highways, over 12,000 miles of sidewalk, over 14,000 signalized intersections and 800 bridges and tunnels in the largest and busiest city in America.

New York City DOT's traffic management system controls the traffic signals at 14,000 intersections, as well as a range of Intelligent Transportation Systems (ITS) devices including traffic cameras, variable message signs and vehicle detection devices. An intelligent software application operating at NYC DOT's Traffic Management Center (TMC) in Long Island City accommodates changing traffic patterns and adjusts signal timing to ease traffic congestion.

NYC DOT selected AT&T and Digi to design the replacement of the previous NYCWiN network. Critical areas included concurrent dual carrier failover/fallback, centralized device

management, NYC Cyber-approved encryption and support for Connected Vehicles (CVs).

Digi provided expert assistance and dedicated resources during system integration and deployment. These implementation services included onsite personnel working daily with NYC DOT network engineers and contractors.

At each cabinet, the previous NYCWiN equipment was replaced with the [Digi cellular router](#), a PCTEL antenna and a Transition Networks Power-over-Ethernet (POE) switch. The POE switch enables communication with cameras and expands the Ethernet port count for connection to various ITS devices such as a CV Roadside Unit (RSU). The Digi cellular router connects to the existing traffic controller and functions as the gateway to the TMC for all ITS devices. Its onboard edge computing platform, built on an embedded Python environment, enables custom integration with non-standard ITS devices and quick adaptation to evolving system requirements.

For more information, visit:

[www.digi.com](http://www.digi.com)

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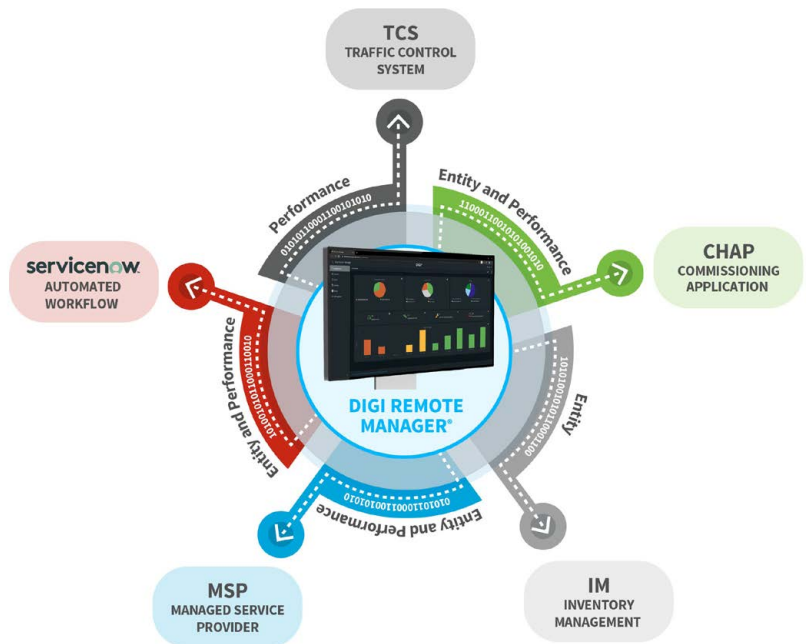
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The project was completed in record time, using zero-touch configuration to enable rapid field deployment and scalability. The new network quickly proved its ROI, meeting the 99.99% availability requirement with highly reliable hardware/software, excellent network fault tolerance/redundancy, as well as great management tools and accurate performance metrics.

NYC DOT takes full advantage of Digi RM, Digi's cloud-based device management and data enablement platform, including network automation to improve security, availability and operational efficiency.

Digi RM automates measurement of key link-level performance metrics enabling quick assessment and visibility into any trends. This takes the guesswork out of troubleshooting, enabling efficient root cause determination and faster remediation.



Here are a few stand-out features of the system:

- ✓ The network incorporates a dual carrier design that maximizes network connectivity and availability by automatically failing over to a secondary carrier in times of network service outages.
- ✓ The network is secured at every level using a defense-in-depth security strategy. The primary link is FirstNet®. In addition, all data packet communications between the intersection and TMC are encrypted and carried over an IPsec VPN using advanced encryption algorithms.
- ✓ Additionally, the Digi router includes a suite of hardware and firmware features called [Digi TrustFence®](#) to protect itself and ensure the reliability and integrity of its security functions, as well as FIPS 140-2 validation. It uses a cryptographic co-processor to protect particularly sensitive data such as stored passwords and encryption keys so that they are not accessible even by an administrator.

The solution proposed by AT&T and Digi progressed through pilot in early 2019 and then into deployment starting in October, finishing in 9 months and under budget. The project rollout earned NYC DOT an award for the Outstanding ITS Project of the Year - Traffic Management Systems by the Intelligent Transportation Society of New York (ITS-NY).

Today, Digi is working with department of transportation agencies across the U.S. to implement similar systems to address congestion, establish automation to improve traffic flow, ensure emergency vehicles can respond quickly to incidents, and provide visibility and management to DOT agencies.

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