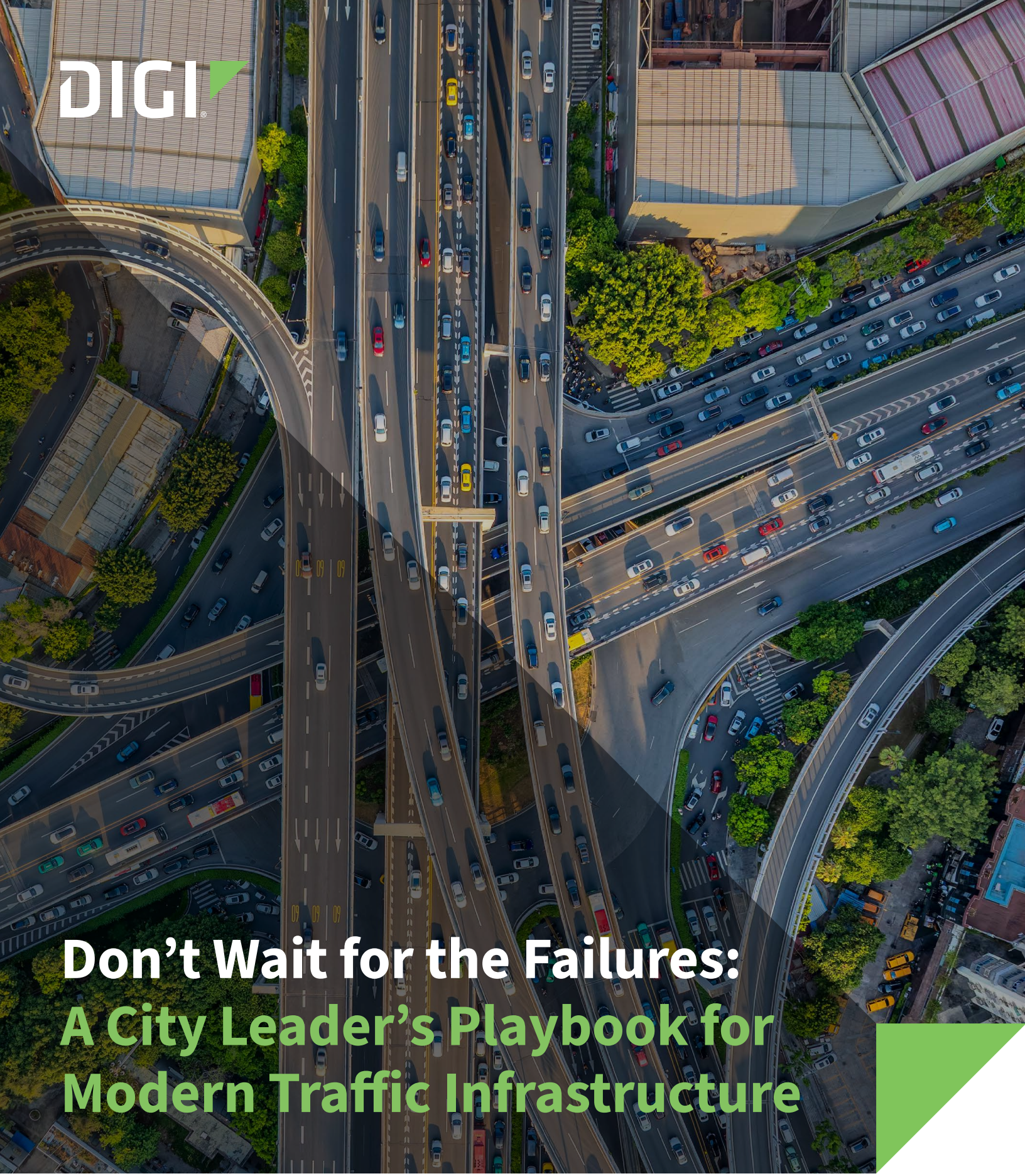


Don’t Wait for the Failures:
A City Leader’s Playbook for Modern Traffic Infrastructure

Modern cities run on movement. But too often, the systems that manage that movement are outdated, vulnerable and costly. Missed maintenance windows and failing legacy communications add risk and frustration. This playbook is for city leaders who understand that the status quo isn't sustainable — and that inaction is the most expensive path forward.

This guide outlines how to proactively overhaul traffic infrastructure with connected systems that are secure, scalable and built to last. It provides strategies, technical insights and examples from real municipalities that have embraced intelligent traffic management to improve safety, reliability and public trust.

Why Now: The Urgency of Upgrading

The economic impact of traffic congestion is staggering:

- U.S. drivers lost an average of 43 hours in traffic in 2024, costing $771 per driver and $74 billion nationwide.
- Freight congestion adds $74.1 billion in losses annually, with $66.1 billion in urban areas.
- Gridlock costs the U.S. economy $224 billion annually, with each commuter losing 54 hours.

When systems fail, consequences follow. These can include everything from traffic snarls, public transport disruptions, and harm to pedestrians, to roadblocks for emergency response teams and the high cost of deploying service teams to bring systems back online.

Here are a few statistics that underscore the impact of these challenges:

- Signal failures in Australia and New Zealand cost communities AUD 268 million annually.
- In Florida, outdated signals contributed to increased pedestrian crashes, higher emissions and longer commutes.

Cities face rising pressure as urban travel rebounds and older systems are strained. Each delay or failure adds to a growing crisis in mobility, safety and trust.

The Infrastructure That Fails Quietly

Most cities have enough traffic control devices but lack the reliable communication infrastructure to support them.

Problems include:

- Outdated backhaul like twisted-pair, leased lines or unlicensed radios
- Black box devices that fail without alerting the network

A modern, resilient foundation includes:

- Redundant LTE/5G cellular links with dual SIMs
- Edge routers connecting cameras, sensors and controllers in one cabinet
- Cloud-based management with real-time monitoring and control

What Modern Traffic Infrastructure Looks Like

Today's traffic management system includes secure, high-performance cellular connectivity in each traffic cabinet, as well as sensors and cameras, supporting more reliable and secure signal timing, traffic monitoring, emergency response and communications with the traffic management center (TMC). Components of the traffic infrastructure can include:

- Signal controllers with real-time programming
- Cameras and sensors for adaptive control and congestion analytics
- Digi TX54 5G/LTE transportation routers to manage data and control traffic
- Digi Remote Manager® to automate configuration, provide continuous monitoring and alerts, and support scheduled firmware updates for security and feature updates

Certification of first responder networks like AT&T FirstNet® to support integration of traffic management systems with emergency response.

- Optional modules like license plate readers, MAC address capture, and variable message signs

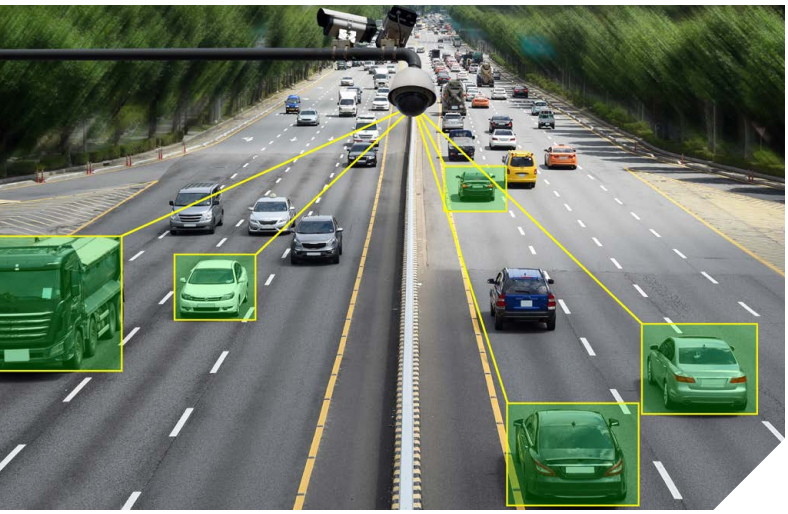
This distributed architecture boosts performance, visibility and redundancy — yielding as high as 99.9% reliability, as demonstrated in New York City's traffic management system upgrade.

Deploy Without the Disruption

Digi's system is built for real-world deployment:

- Install in existing cabinets without modifying signal controllers
- Use Digi Remote Manager for zero-touch configuration
- Validate performance with on-site latency and throughput tests

Cities across the U.S. have deployed Digi infrastructure at scale without interrupting operations.



Meeting the Requirements of Traffic Managers

Traffic leaders are responsible for mobility, safety and public trust. They need infrastructure that is:

- **Secure**: Encrypted VPNs, WAN bonding, segmented networks
- **Centralized**: Real-time dashboards, firmware updates, automated compliance
- **Scalable**: 5G-capable hardware, edge intelligence, modular deployment

These features enable real-time response, data-driven decisions and future-ready systems.

When Cities Lead: Examples from the Field

- New York City: Deployed Digi transportation router solutions at 14k intersections, enabling centralized control and real-time diagnostics
- Tri-Met: Installed Digi transportation router solutions in buses citywide for fare tracking, CAD/AVL, Wi-Fi and Transit Signal Priority across its fleet
- Philadelphia SEPTA: Deployed Digi transportation router solutions in their commuter railways to meet Positive Train Control standards, improving safety and readiness for CBTC

Match the Solution to the Mission

Use Case	Router	Key Points
Fixed Infrastructure or Transit Vehicles	Digi TX54	5G/FirstNet Ready, dual SIM, single or dual Wi-Fi, rugged design, GPS for location tracking, wide temperature range — manage with Digi Remote Manager
Transit Vehicles and Trains	Digi TX64	5G/FirstNet Ready, dual SIM, PCI compliant, dual Wi-Fi — manage with Digi Remote Manager
Roadside Unit	Digi IX30	Compact, dual Ethernet, high-temp, reliable for message signs — manage with Digi Remote Manager
Budget Conscious Sites	Digi IX20	Low-power, LTE Cat 4, cellular backup, industrial grade resilience — manage with Digi Remote Manager

What Digi Brings to the Table

Digi delivers purpose-built solutions for municipal infrastructure, combining secure, reliable, high-performance cellular routers with robust remote management. Digi Remote Manager offers centralized visibility and control, including remote diagnostics, firmware updates and system-wide upgrades.

Additionally, Digi offers a range of integrated and value-added services to support successful deployments. The Digi TrustFence® security framework protects connected devices with encryption, secure boot and certificate-based authentication. Digi WAN Bonding is a value-added service that ensures failover and bandwidth resilience. Digi Professional Services offers site surveys, deployment services, team training and software development to support smooth rollouts.

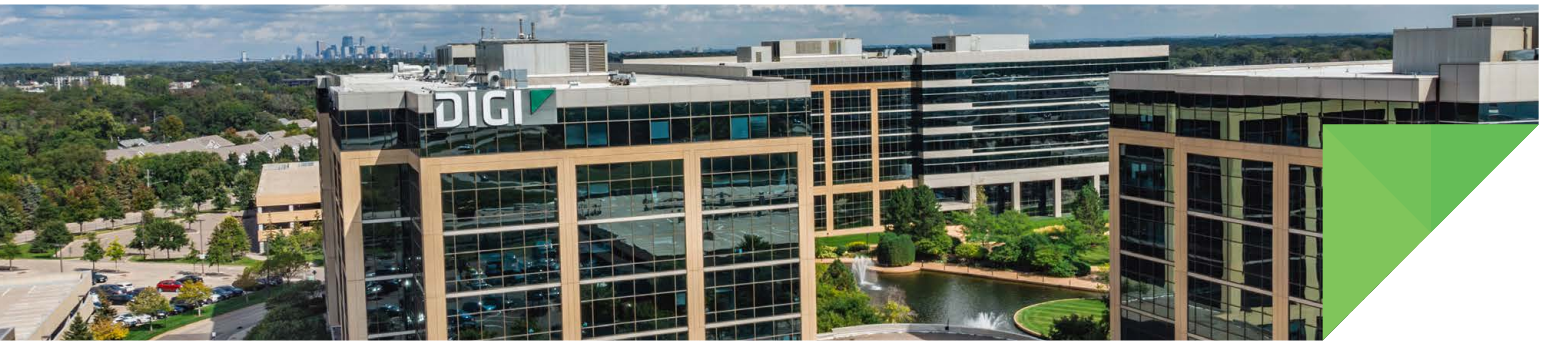
When failure isn't an option, cities rely on Digi.

Conclusion

Failures are more costly than end-to-end solutions that are optimized for an organization's business requirements and Opex/Capex needs. Whereas proactive deployments of secure, high-performance IoT solutions deliver rapid ROI and enhanced citywide monitoring and management, unreliable systems damage public trust and delay emergency response.

With field-tested hardware, centralized management and built-in security from Digi, cities can modernize traffic infrastructure proactively — and painlessly.

Get started: **Contact us today**!



Why Digi?

Digi is a complete IoT solutions provider, supporting every aspect of your project, from mission-critical communications equipment to design and deployment services to get your application designed, installed, tested, and functioning securely, reliably and at peak performance.

Digi builds its products for high reliability, high performance, security, scalability, and versatility so customers can expect extended service life, quickly adapt to evolving system requirements, and adopt future technologies as they emerge. Digi embedded modules, routers, gateways, and infrastructure management solutions support the latest connected applications across verticals, from the enterprise to transportation, energy, industrial and smart cities use cases.

Our solutions enable connectivity to standards-based and proprietary equipment, devices, and sensors, and ensure reliable communications over virtually every form of wireless or wired systems. Our integrated remote management platform helps accelerate deployment and provide optimal security using highly efficient network operations for mission-critical functions such as mass configuration and firmware updates, as well as system-wide monitoring with dashboards, alarms, and performance metrics.

Company Background

- Digi has been connecting the “Internet of Things” — devices, vehicles, equipment and assets – since 1985
- Digi is publicly traded on the NASDAQ stock exchange: DGII
- Headquartered in the Twin Cities of Minnesota, Digi employs over 800 people globally, and has connected over 100 million devices worldwide

As an IoT solutions provider, Digi puts proven technology to work for our customers so they can light up networks and launch new products. Machine connectivity that’s relentlessly reliable, secure, scalable and managed — and always comes through when you need it most. That’s Digi.

Next Steps

- Ready to talk to a Digi expert? **Contact us**
- Want to hear more from Digi? **Sign up for our newsletter**
- Shop now for Digi solutions: **How to buy**

Contact a Digi expert and get started today

PH: 877-912-3444
www.digi.com

Digi International Worldwide Headquarters
9350 Excelsior Blvd. Suite 700
Hopkins, MN 55343

/digi.international @DigiDotCom /digi-international