Reliable Connectivity at the Edge: Using 5G for Enterprise Network Failover

Eliminate Downtime with High-Speed Wireless Backup

Executive Summary

More than ever, business relies on the Internet. And that's a challenge because downtime is costly — both in terms of revenue and reputation. The challenge only grows as we add more cloud applications and connect more Internet of Things devices, which makes network availability even more important.

This white paper examines how 5G wireless connectivity is revolutionizing enterprise network failover strategies, offering a simple, secure, and reliable backup solution that can reduce expenses as it replaces less dependable services.

Digi offers a 5G-based failover architecture that seamlessly activates during outages, ensuring business continuity. Compared to satellite or first-generation cellular service, Digi 5G routers offer superior bandwidth, latency, and deployment flexibility. Let's explore key use cases and implementation best practices, and discuss why enterprises should prioritize Digi 5G in their business continuity planning.

Introduction

Enterprises everywhere are increasingly digital-first. Whether it's point-of-sale systems, remote sensor monitoring, or real-time inventory management, always-on connectivity is critical. However, wired broadband and fiber connections — even from Tier 1 providers — are never immune from line cuts caused by accidental physical damage, aging infrastructure, maintenance, or upstream issues.

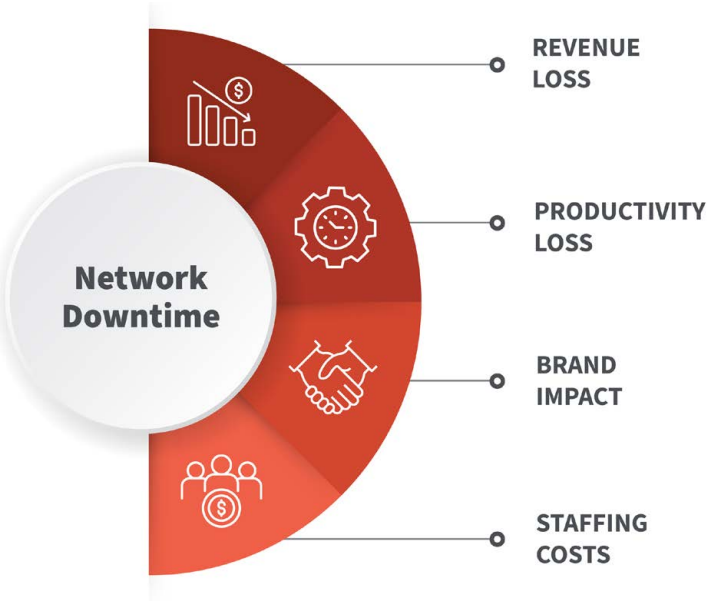
Legacy backup systems have high latency and are prone to damage from events like storms and smoke. Wired services like DSL and T-1 often fall short of supporting today's bandwidth-intensive applications. A second wired connection is also fallible because it typically shares the same route to the same central office as the primary, meaning both lines are vulnerable to the same disruptions. Newer services like cable Internet and fiber optic service are also susceptible to line cuts.

As a result, businesses need a more robust failover solution — one that can activate instantly and support full business operations. 5G provides that option, and with dual-carrier cellular solutions from Digi, it can provide the highest availability.

The Challenge: Unplanned Downtime Hurts Business

Downtime has both visible and hidden costs:

- **Retail:** Payment terminals stop processing transactions
- **Healthcare:** Patient records become inaccessible
- **Manufacturing:** Smart systems halt mid-process
- **Remote offices:** Collaboration and VPN tools go offline



Network downtime costs a small retail business between $137 and $427 per minute in lost revenue. The same study finds enterprise downtime can cost up to $9,000 per minute. Overall, Gartner reports an average loss of $5600 per minute across all business types. The simple truth is that traditional failover options are either too slow to activate, too limited in bandwidth, or too complex to deploy across distributed environments.

The Challenge: Unplanned Downtime Disrupts Operations

A network outage is a showstopper when customers can't use their credit cards. Payments stop when the network fails because Payment Cardholder Industry (PCI 4.01) standards no longer allow the storage of transaction data for processing later. So, to reduce the risk of data breaches and fraud, all payments are stopped. Additionally, a business may lose critical in-transit data in the middle of transactions. Re-syncing takes time and can wreak havoc on business until data is restored and verified.

The Solution: 5G as a High-Performance Failover Backbone

Some companies try to back up their primary wired connection with a second wired line. Unfortunately, if they are added after walls, floors and ceilings are in place, wired failover solutions can be very expensive. Worse, wired backup provides little improvement in reliability, since backup wiring often originates at the same central office and follows the same route to a customer site as primary wiring, making it subject to the same environmental risks and line damage.

Benefits of Cellular Backup

Recognizing the risks of wired backup, many companies are turning to wireless cellular solutions for backup connectivity. When the wired system fails, the connections automatically failover to a 5G connection, ensuring that Internet connectivity and vital business operations remain uninterrupted.

Wireless failover allows business communications to quickly and seamlessly switch from a disrupted connection to an always-on, high-speed connection that is independent of the primary wired line. When paired with out-of-band management, automated cellular failover can virtually eliminate business downtime and truck rolls.

The advantages of cellular failover include:

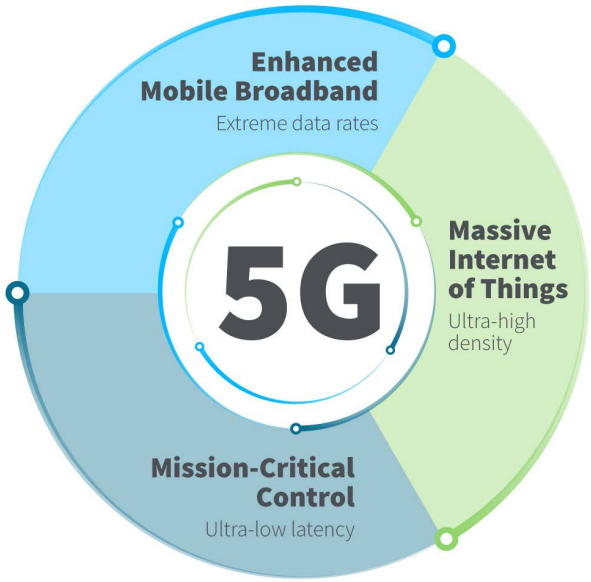
- **Reliability —** The availability of 5G networks used for cellular failover is now reaching 99.99%. With the ubiquity of 5G infrastructure, its dependability and speed are available almost anywhere.
- **Redundancy —** Cellular failover enables devices to switch between multiple wireless carriers for greater redundancy, while controlling costs.
- **Security —** A stateful firewall with best-practice configurations, automated patches, and updates provides the highest level of security.
- **Management —** With a cellular connection, there's no need to replace existing infrastructure, like routers, firewalls or SD-WAN appliances. A serial port for out-of-band management means you can configure and troubleshoot other devices remotely, even when the primary connection fails.

In addition, many companies are discovering that cellular not only provides reliable failover but can also be a cost-effective primary connection as well, especially in remote locations.

5G wireless networks offer enterprise-grade performance that rivals — and sometimes exceeds — fixed-line broadband:

- Low latency: About 10–20 ms
- High throughput: Up to several hundred Mbps (and growing)
- Wide coverage: Nationwide rollouts in urban and rural areas
- Quick deployment: No trenching or cabling required

Using 5G routers or gateways, businesses can configure automatic failover policies that switch from primary wired connections to 5G in milliseconds. With dual SIM, SD-WAN, and cloud-managed platforms, 5G failover is now both intelligent and scalable. As an example, Digi provides this capability with its integrated Digi SureLink® feature.

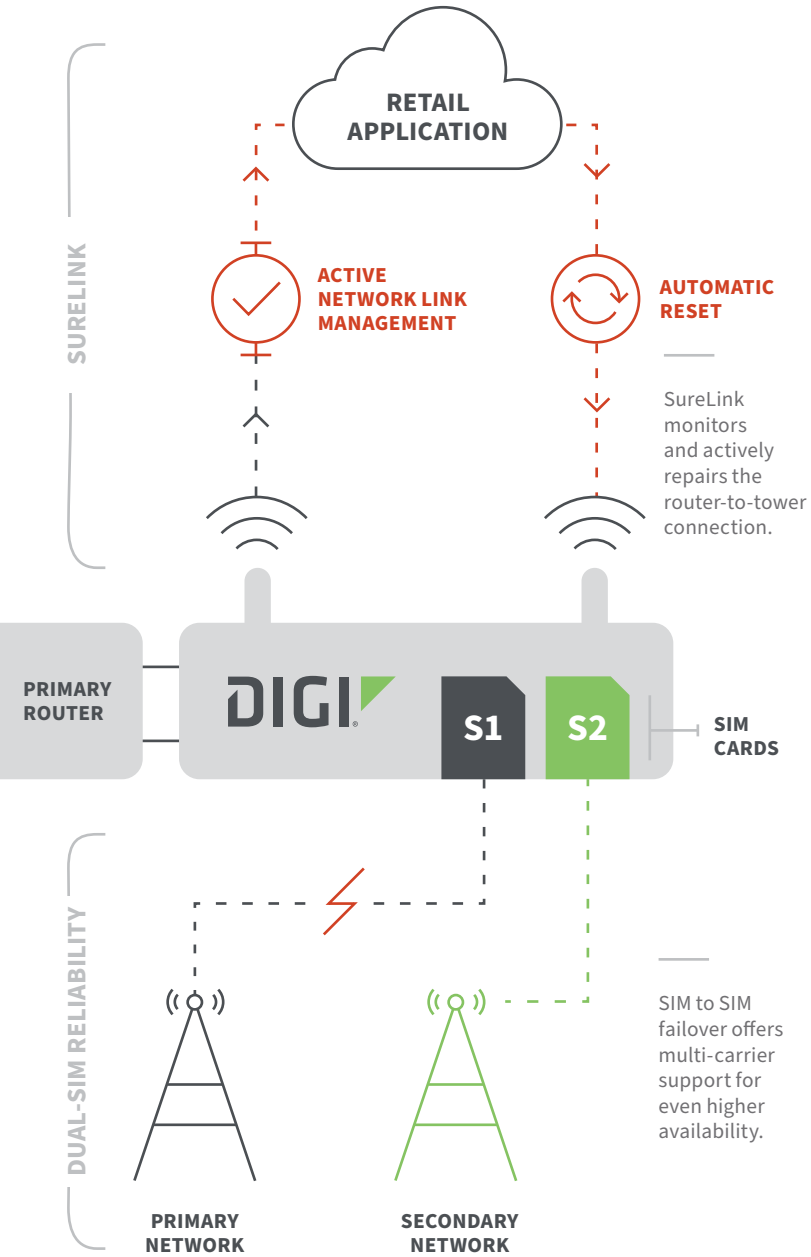


Digi SureLink

Digi SureLink continuously probes the WAN (wired or cellular) using ping, TCP, or DNS at customizable intervals, to answer failures with customizable recovery actions across interfaces.

Dual-SIM Reliability

Digi SureLink provides link integrity and offers dual-SIM reliability, meaning if one of the SIM cards in your router cannot communicate with the primary network, the second SIM card will automatically take over to establish and maintain a connection.



5G Failover Key Features and Capabilities

Digi solutions integrate several key capabilities that support rapid, secure integration:

- **Seamless:** Automatic switch from wired to 5G with no user disruption
- **Enterprise security:** Built-in VPN, firewall, and encryption for secure remote access
- **Cloud management:** Remote monitoring, configuration, and analytics via cloud portals
- **Zero-touch deployment:** Preconfigured failover kits for remote locations and branches.

Benefits and Value Proposition

- **Near-zero downtime:** Maintain operations even during major fiber or ISP outages with dual SIMs
- **Improved customer experience:** Ensure POS systems, kiosks, and web services stay live
- **Rapid deployment:** Quickly deploy especially in remote, temporary, or pop-up environments
- **Cost control:** Enjoy pay-as-you-go data plans vs. expensive redundant fiber lines
- **Future-ready:** Leverage the speed and scalability of 5G to meet demands like higher speeds and new services like bandwidth slicing across carrier clouds

Use Cases / Real-World Applications

Retail Chain Failover

A large retailer uses 5G routers with dual SIMs to maintain network uptime across 500+ stores. Even during regional ISP outages, stores continue to process payments and update inventory.

Mobile Health Clinics

Healthcare providers use 5G failover for mobile units that need secure, continuous access to patient records, even when moving between cities.

Enterprise Branch Office Backup

A financial institution deploys 5G routers in all remote branches to ensure always-on VPN access, enabling staff to serve customers even during wired disruptions.

Technical Overview

The Digi EX50 cellular router includes a wide range of features to support near-zero downtime. The small form factor of Digi EX50 makes it the 5G go-to enterprise solution where the work is happening — at the headquarters for backup connectivity, at the branch for cost-optimized primary connectivity, or the IT-managed home office for secure, all-in-one connectivity with Wi-Fi.

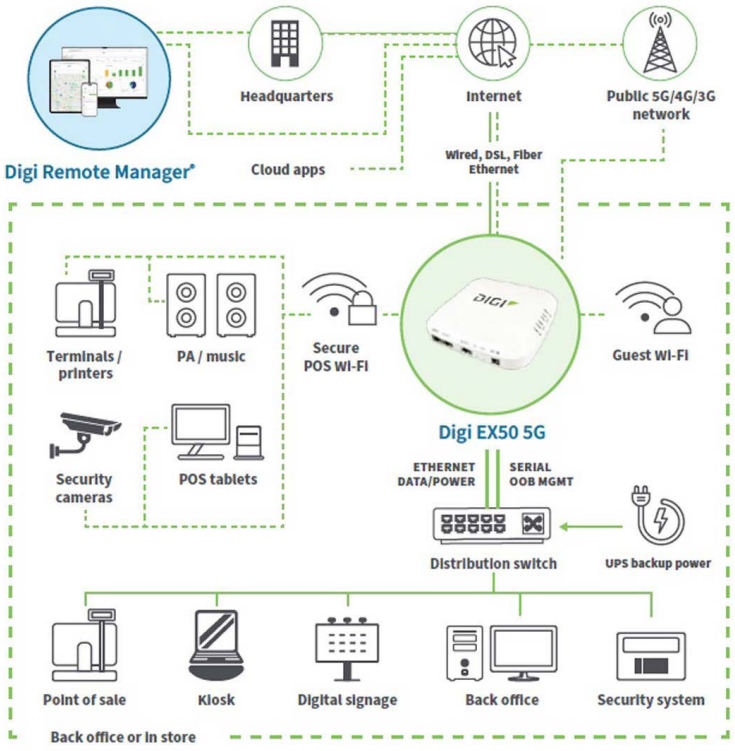
Part of Digi's enterprise solutions, the Digi EX50 comes with industry-leading software, including Digi Accelerated Linux (DAL OS), the Digi TrustFence® security framework, and Digi Remote Manager for cloud based network automated configuratiion, alerts and reporting. Digi also offers value-added services for enhanced functionality, including Digi Containers for rapid development of lightweight Linux container applications, and Digi WAN Bonding, which supports maximum connectivity via WAN aggregation and WAN smoothing. Multiple routers can be paired for high availability. These tools deliver security, reliability, and efficient, system-wide management of business infrastructure.

Dual-SIM slots provide high availability and carrier flexibility for wireless failover. With 4G LTE and 3G fallback, there's coverage in areas where 5G is not yet deployed. The latest generation Wi-Fi 6 radios in the Digi EX50 cellular router operate at the same time for higher speed, capacity, quality of service, and range than previous Wi-Fi products.

Dual 2.5 Gigabit Ethernet ports break the Gigabit barrier and deliver 5G speeds for future-ready networks.

Digi EX50 supports indoor use cases with an extended operating temperature range for light industrial use cases such as smart factories, warehouses, construction sites, or infrastructure sheds. Digi EX50 also supports CBRS, C-band and FirstNet® for a broad range of use use cases, including critical communications. Digi EX50 5G cellular router also meets the U.S. government FIPS 140-2 cybersecurity standard.

An available serial port with Cisco straight-through pinout enables secure out-of-band management of other on-site equipment. To simplify installation, Digi EX50 can be directly powered by an active PoE+ switch or a DC IN barrel connector as the primary or backup power source for redundancy.



Key Specs:

- 5G SA/NSA + LTE Cat 20
- Dual SIM (active/passive)
- Ethernet LAN ports + Wi-Fi 6
- Remote device control and management

Security:

- VPN tunnels (IPSec, GRE, WireGuard, Digi Trustfence)
- PCI DSS compliance
- Stateful firewall + intrusion prevention

Conclusion

As downtime becomes less tolerable and digital dependency grows, 5G network failover offers a practical, powerful way to keep your operations running. Its speed, flexibility, and ease of deployment make it a superior choice over traditional backup options.

Businesses looking to modernize business continuity and disaster recovery strategies should strongly consider integrating Digi EX50 5G in their network architecture.

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.

Learn more on our About Digi page.

Contact a Digi expert and get started today

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