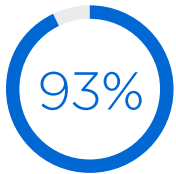# Build a resilient networking architecture

Support your organization's digital growth
with a connected ecosystem

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The future of manufacturing aims to be more connected than ever. Over 70% of manufacturers are planning increases in their investments in the Internet of Things (IoT),[1] which enables systems to communicate with each other, share data and coordinate operations autonomously. The data sharing within this growing network of devices drives improvements spanning greater efficiency and productivity, enhanced monitoring, reduced downtime and maintenance and improved safety.

The development of a connected ecosystem of devices reflects manufacturers' heightened focus on internal needs and issues as they look to increase product resiliency and improve the customer experience. Desiring new paths for modernizing and streamlining operations, leaders are migrating applications to the cloud. As they do, they require security strategies to meet the cyberthreats introduced by connected IoT devices and moving beyond private networks. Interest in AI, machine learning, robotics and automation also figures into manufacturing priorities as companies aim to drive innovation and differentiate themselves in the market.

Charting a path to new opportunities

En route to digital modernization and growth, companies must find ways to convert an evolving set of challenges into meaningful opportunities. Hurdles are often related to the rapid rise of new technologies, tasking IT staff to manage constant change and increasing complexity.
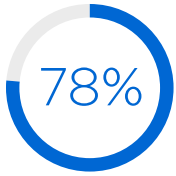
Connect to smart technologies — and operational benefits

Successful modernization is built on uninterrupted, high-performing connectivity. The upsurge of smart manufacturing demands high-speed wireless connectivity to securely process escalating amounts of data. Adding IoT devices to the network contributes to that demand. Meeting it is vital for businesses looking to support smart technologies, enhance the customer experience, increase monitoring capabilities and improve employee safety. Fast cloud access is also crucial to reduce latency and achieve greater operational efficiency and responsiveness.

Unlock the intelligence in connected data

As the number of smart, connected devices increases, the volume of collected data grows. Connected data is key to new revenue streams, supply chain efficiencies, improved insights and lower operating costs. Data access can allow companies to undertake real-time monitoring and analysis, support predictive maintenance and make better, faster decisions. Reliable, scalable, secure data retrieval and use maximizes the potential of powerful applications such as AI, robotics and machine learning.

93%

of shippers say they are planning to maintain or increase their technology investment spending.[2]

1/2

of manufacturing executives say the pace of AI adoption in the industry is fast or very fast.[3]

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78%

of executives say their organization does not have the in-house skills to fully achieve their cybersecurity objectives.[5]

Manage growing security threats

With rising data comes the imperative to implement systems and processes to securely store, access and analyze that data. Security is a pressing necessity for the industrial sector, which experienced the costliest year-over-year increase of any industry, rising by an average $830,000 per breach according to one report.[4] The migration to cloud architectures and software as a service (SaaS) solutions, paired with the increased number of devices on the network, have expanded the attack surface, resulting in elevated company risk. By connecting your operational technology, IT and external networks, you can create new vulnerabilities that require protection and additional controls.

Keep pace with the technology

The speed of innovation can often exceed the skills of busy IT teams. Across manufacturing segments, companies struggle to respond to constantly evolving IT demands and harness the benefits of advances in the cloud, automation, data analysis and predictive maintenance.

Segment spotlight: Exploring three key industries

Companies will face obstacles as they pursue network modernization and digital growth. A look at the challenges and priorities of manufacturing, construction and transportation organizations provides a valuable snapshot of common industry considerations.

Manufacturing

	Challenges	Priorities
Costs	Minimizing cost pressures and protecting long-term profitability	• Reduce overall networking and operational costs.
Operations	Adapting to supply chain disruptions and establishing resiliency	• Migrate applications to the cloud. • Simplify provisioning, visibility and integration.
Innovation	Scaling smart factory initiatives and other digital capabilities	• Implement a WAN solution to support modernization, minimize latency and avoid backhauling traffic to a centralized data center. • Build a cloud-direct infrastructure that can scale.
Security	Safeguarding against growing cybersecurity and manufacturing vulnerability	• Invest in smart manufacturing to modernize networking and security.

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Construction

	Challenges	Priorities
Costs	Adjusting to ongoing inflation and material costs	• Build a strong, reliable managed network solution that integrates network management with smart devices.
Operations	Overcoming supply chain disruptions and labor shortages	• Enable data access from centralized dashboards for real-time decision-making. • Optimize use of IoT devices at sites.
Innovation	Minimizing productivity loss and project delays	• Implement advanced project management software tools.
Security	Protecting sensitive data	• Integrate security and zero-trust user access to data, regardless of location.

Transportation

	Challenges	Priorities
Costs	Improving cost management	• Invest in digital logistics.
Operations	Boosting productivity and performance and managing staffing shortages	• Achieve always-on availability to avoid disruptions to data and timely communication. • Ensure business continuity and sustain visibility of the entire network.
Innovation	Navigating an increasingly complex technology landscape	• Adopt a resilient network to avoid disruptions, especially to mission-critical applications. • Achieve reliable connectivity to power new technology and apps.
Security	Protecting against rising cyberthreats, including distributed denial of service (DDoS) attacks	• Overcome security skills gaps to improve protection of physical and digital assets.

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40 billion

IoT device connections
by 2030.[7]

74%

of engineering and
construction firms say
a focus on innovation is
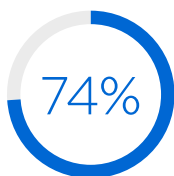important for recovering
from disruptive events.[8]

Build your future-ready plan for digital growth

Companies remain competitive by modernizing and delivering the experience
their customers expect. As a result, 95% of manufacturers are using or
evaluating smart manufacturing technology, up from 84% in 2023.[6] Yet the
volume of new solutions and constant change can make it difficult for leaders
to prioritize investments. The list of needs seems to grow by the day, from
software-defined wide area networks (SD-WANs) to unified communications
(UC) and smart cameras. Partnering with a managed services provider offers a
path forward by simplifying business, network management and IT operations
with a single point of contact.

Enhance connectivity

Managed services can enable companies to achieve quick, consistent
connectivity to the internet and important data centers and cloud providers,
improving the public or hybrid cloud experience. High-speed data and fast,
dedicated fiber internet connections can increase infrastructure flexibility, even
scaling up to support demands such as large data transfers, low-latency apps
and cloud workloads. Fast, reliable connectivity can also accelerate creating and
accessing stored data backups, making it crucial for business continuity and
disaster recovery plans.

With fully managed, cloud-based UC solutions, companies can simplify
workflows and enhance communication and collaboration by combining
calling, video conferencing, messaging, meetings and virtual workspaces in a
single application. A partner can also enable you to extend your office network
to provide remote and mobile employees secure access to the network and
enterprise cloud services providers from anywhere.

Cut costs and maximize uptime

Modernizing your network can require significant capital investment. With the
right partner, you can help eliminate initial capital costs and reduce operating
expenses by combining network hardware, maintenance and repairs. The result
is simplified forecasting, planning and billing, offering an important means for
lowering your total cost of ownership (TCO) over time. Improved uptime across
the business similarly adds to the cost benefits, thanks to greater visibility,
monitoring and predictive maintenance.

Free up IT staff

Offering experts in a range of technologies, a managed solutions provider can
serve as an extension of your team. That means you can unlock efficiencies
and get more done without adding in-house IT resources. At a time when
technology adoption is accelerating, your provider can help you quickly
fill emerging skills gaps as it becomes necessary. This allows your staff to
concentrate on other business priorities while driving a quicker, more seamless
digital transformation.

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Improve efficiency

Consolidating services with a trusted partner can deliver efficiency benefits across your company, enabling you to streamline processes and minimize the impacts of disruptions and obstacles, such as labor shortages. You can improve operational intelligence and productivity by accessing benefits such as integrated nationwide connectivity, network management and comprehensive network-based security. Consider co- or fully managed WAN or local area network (LAN) solutions. An SD-WAN can provide efficient management of a WAN while offering complete visibility and control from a cloud-based portal for quick insights into usage and performance across your locations.

Strengthen security

A key priority for any organization, especially those moving toward a smart manufacturing future, is defending itself against bad actors. An experienced managed services partner can help safeguard the security and privacy of users and data in the cloud and your network. Protections include cloud-based firewalls, secure web gateways (SWGs) and zero trust network access (ZTNA). Integrated security and zero-trust user access to data, regardless of location, help mitigate threats like ransomware, phishing and data breaches.

With managed protection, you can shield applications and systems from DDoS attacks by identifying anomalies in traffic flows and responding to and mitigating threats. Equally important are your physical assets, from buildings to machinery. Smart cameras and environmental sensors answer this need, protecting your locations while supporting large-scale smart factory projects.

40%
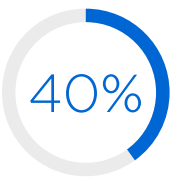
of breaches involve data stored across multiple environments.[9]

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Achieve smarter connectivity with Spectrum Enterprise®

Build a resilient networking architecture for the future. Spectrum Enterprise offers a comprehensive portfolio of high-performance enterprise technology solutions to help you meet your bandwidth, security and connectivity needs and goals. We can help you elevate the employee and customer experience, support logistics and simplify network management through reliable, secure, cost-effective managed solutions and ongoing maintenance that help ignite digital growth. Consult our experts to determine the industrial technology solutions for you, all backed by 100%, 24/7/365 U.S.-based support.

Learn more

1. "2023 State of IoT Adoption Report," Eseye, 2023.

2. Sandy Gosling, Jason D. Li, Arsenio Martinez et al., "Digital Logistics: Technology Race Gathers Momentum," McKinsey & Company, November 16, 2023.

3. "Bringing Breakthrough Data Intelligence to Industries," MIT Technology Review and Databricks, December 2023.

4. "Cost of a Data Breach Report 2024," Ponemon Institute and IBM Security, 2024.

5. "Global Cybersecurity Outlook 2024," World Economic Forum, January 11, 2024.

6. "9th Annual State of Smart Manufacturing Report," Rockwell Automation, 2024.

7. Satyajit Sinha, "State of IoT 2024: Number of Connected IoT Devices Growing 13% to 18.8 Billion Globally," IOT Analytics, September 3, 2024.

8. Geno Armstrong, Clay Gilge, Kevin Max et al., "Familiar Challenges—New Approaches: 2023 Global Construction Survey," KPMG, June 2023.

9. "Cost of a Data Breach Report 2024."

About Spectrum Enterprise

Spectrum Enterprise, a part of Charter Communications, Inc., is a national provider of scalable, fiber technology solutions serving many of America's largest businesses and communications service providers. The broad Spectrum Enterprise portfolio includes networking and managed services solutions: Internet access, Ethernet access and networks, Voice and TV solutions. The Spectrum Enterprise team of experts works closely with clients to achieve greater business success by providing solutions designed to meet their evolving needs. For more information, visit enterprise.spectrum.com.

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