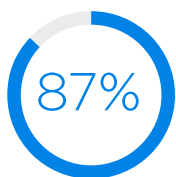


Support manufacturing
growth with a connected,
modernized ecosystem





of manufacturers believe devices need to become more intelligent and process data at the edge.²

The demands on a manufacturer's production infrastructure can shift as quickly as their customers' sales forecasts or the state of the economy at large. With processes digitally connected more than ever before, modernizing legacy networks can mean the difference between merely surviving the current environment or thriving in the future.

Supporting connected devices to maximize resources

The Industrial Internet of Things (IIoT) continues to grow at a rapid pace, empowering the workforce to accomplish new levels of productivity. The market for IIoT devices is expected to grow at a 16% compound annual growth rate in the coming years.¹ Most manufacturers (87%) believe devices need to become more intelligent and process data at the edge.³ In addition to the sensors within manufacturing equipment itself, environmental monitoring to track heat, moisture, motion and other factors can support preventative maintenance and quickly alert operators to problems before they cause damage.

Reaping these gains requires a more capable infrastructure than what is available with many legacy networks. Wireless connectivity, for example, needs to scale quickly as new technology and equipment come online to meet customer demand. The same is true for other components of the LAN, including switches and routers that must contend with a proliferating volume of data that helps production lines reach peak efficiency. Investments across the network ecosystem today can help manufacturers stay competitive in the future. To improve profits and speed up production, 86% of manufacturers intend to increase their usage of IIoT, with 30% revealing plans to double device numbers.⁴

Managing data for better insights

Knowing when, where and how assets in production affect the bottom line is one of the most essential functions to being cost-effective. This is particularly true in the supply chain, which 71% of manufacturing leaders describe as challenging or extremely challenging.⁵

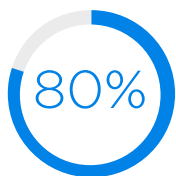
Connecting insights from sensors on-site and systems processing supplier data can help streamline asset management. As a result, analytics software was a top focus for 60% of manufacturers in a recent survey.⁶ Industrial organizations increasingly use machine learning and other advanced forms of business intelligence to improve forecasting and help spot shortages of essential inputs before they affect production.

Much of this critical analysis takes place in the cloud. And the volume of data produced across manufacturers' operations continues to grow, making them more reliant on scalable storage and computing resources from cloud service providers.

As more data is processed off-site, manufacturers need to prepare their digital ecosystems to manage higher volumes of traffic across internet and Ethernet connections than they have in the past. Scalable, high-capacity fiber bandwidth has become a must-have in industrial applications. For many organizations, this includes direct private connections to cloud service providers to protect proprietary data while delivering the low latency needed for sensitive applications.

Building flexible, effective networks

As manufacturers seek to be more agile amid changing market conditions and competitive pressures, their IT leaders are looking for ways to make their networks as adaptable as possible. Many are updating their entire approach to connecting factories, data centers and remote sites. Software-defined wide area networks (SD-WANs) adapt to new requirements more easily than legacy solutions. With SD-WANs, IT teams can add new locations quickly with secure, cost-effective internet. Configurations across sites can be modified from a single, cloud-based application and traffic can be more effectively routed throughout the organization. Increased complexity, risk and modernization are driving 80% of businesses to conduct regular upgrades of their SD-WAN within two years, with 34% doing so every year.⁷



of businesses conduct regular upgrades of their SD-WAN within two years.⁸

Managed services represent another area where a new approach to networking has allowed manufacturers to become more agile. Instead of buying and installing capital-intensive hardware, businesses can shift those costs into their operating budgets and partner with a service provider that owns, installs, maintains and supports network components for them on an ongoing basis. This approach allows manufacturers to scale their networks quickly or reposition sites with less financial risk in a rising interest rate environment. Managed or co-managed services offload routine network maintenance from IT teams to allow them to focus on more impactful priorities. When surveyed, 95% of manufacturers prefer a partner with end-to-end IoT services under one roof.⁹

Over 80% of Fortune 500 companies rely on Spectrum Enterprise® for technology solutions.*

Protecting productivity

Due in part to inflation and increased capacity, unplanned downtime costs manufacturers at least 50% more today than it did in 2019.¹⁰ With factories more connected than ever before, network uptime and reliable connectivity are critical to profitability.

Manufacturers should make sure their business continuity plans take into account the service-level agreements (SLAs) for their internet and Ethernet services and how quickly connections can be restored in the event of a fiber cut or another disruption. Service providers should be able to deliver redundancy for connections to essential plants and data centers with dual-entry fiber connections, path diversity between locations and automatic failover.

Just as important is protecting the traffic that travels across those connections. Manufacturing is a frequent target of bad actors seeking to steal data or disrupt operations. From ransomware alone, organizations in the industrial sector reported 605 successful attacks in 2022, a 92% increase over the previous year.¹¹ Manufacturers must be diligent to ensure their anti-malware measures are always up to date or rely on a partner that can automate protection from external threats. Organizations are also adopting zero trust solutions to protect both their networks and applications in the cloud. For volumetric threats, having a solution in place to counter a distributed denial of service (DDoS) attack is essential to minimizing its impact.

Transforming networks for the future of manufacturing

Advances in analytics, security and cloud connections, as well as upscaled connectivity and networking solutions to support them, can accelerate the effectiveness of technologies on the production floor. Spectrum Enterprise has the nationwide fiber infrastructure, local technicians and industry-leading SLAs that help build an advanced, fully integrated IT ecosystem. Our expertise and award-winning connectivity and networking solutions can help improve your operations — from the supply chain through production and the experience of the end customer.

Learn more about building and maintaining a resilient manufacturing network at enterprise.spectrum.com/manufacturing.

*Claim based on Fortune 500 companies within Spectrum Enterprise service area with at least one service.

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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.