Enterprise-class connectivity

Turning challenges into opportunities for 2025 and beyond

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Introduction

Welcome to 2025, a world where reliable, high-speed connectivity is no longer optional — it's an essential business tool. No matter where they work, members of every team depend on uninterrupted access to information and systems. Whether it's your office, remote workforce, or devices in the field, businesses demand network solutions that are available, secure, and flexible enough to adapt to constant change.

But here's the challenge: we're operating in an accelerated world where markets shift overnight and the rules keep changing. Geopolitics, supply chain disruptions, and evolving customer behaviors are the backdrop for every business today. To do more than just operate smoothly — to compete and thrive — enterprises must look beyond the connectivity baseline and focus on performance, immediacy, and innovation.

TREND ONE: Predictability and reliability as the new value metrics

Enterprise data today is richer, more distributed, and more time-sensitive than before. Video and latency-sensitive collaboration tools now dominate the workforce. The Internet of Things (IoT) and real-time data collection are critical to manufacturing and automation systems. Computing workloads run both from the laptop and the cloud. Moreover, AI-based applications and real-time data-driven insights enable in-the-moment customer engagements and operational decisions. It's here that the quality, reliability, and consistency of bandwidth matters, where jitter and delay can render data unusable.

TREND TWO: Data access is good, but data immediacy is better

More data is collected — and processed — at the network edge than ever before, while data storage is increasingly distributed across hybrid, multicloud systems. While access to data was enough a few years ago, da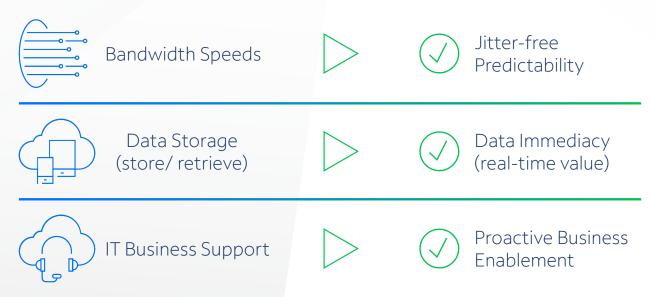ta immediacy and the ability to gather, process, and use real-time data is the new norm and key to the ability of an enterprise to manage business operations and meet customer and client expectations.

TREND THREE: IT moves beyond business support to proactive business enablement

The role of information technology (IT) and IT professionals within enterprise organizations has also evolved, becoming more dynamic and more challenging than it was just a few years ago. No longer confined to deploying, managing, and supporting technology (the old help desk model), IT departments have become key enablers of business success. It's no longer about choosing the right technologies (e.g., Ethernet vs. WiFi, Data Center vs. Cloud, or DSL vs. Internet) but choosing the right mix of technologies that meet evolving needs.

By proactively driving innovation, enhancing operational efficiency, and aligning technological capabilities with strategic goals, IT now plays an integral role in shaping the future of business as a strategic partner, essential to the overall growth and success of the enterprise.

The Enterprise Value Shift

Bandwidth Speeds	▷	✓ Jitter-free Predictability
Data Storage (store/ retrieve)	▷	✓ Data Immediacy (real-time value)
IT Business Support	▷	✓ Proactive Business Enablement

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Did You Know?

According to the US Census Bureau, there are over 390,000 Mid-to-Larger Enterprises (MLEs, firms with between 30 and 999 employees) distributed across more than 900,000 unique locations.

(Source: https://www.census.gov/programs-surveys/susb.html)

Keeping pace with new technologies, evolving customer and market requirements, and shifting business models can challenge even large enterprises that can build deep technical expertise and deeper financial resources. However, for mid-market or even slightly larger organizations — what we refer to as Mid-Market and Large Business, of 30 and 1,000 employees — the challenges and risks can be overwhelming.

In this report, we will look at some of the risks and challenges enterprises face in selecting, deploying, and maintaining communications network infrastructure to meet today's compute and data immediacy requirements. We'll also lay out a framework or pillars for success — for achieving enterprise-class connectivity — and outline a series of questions all enterprises should be asking themselves and their partners as they look to improve operating efficiency, ensure flexibility for the future, and deliver outstanding experiences to their customers, employees, and partners today and in the coming years.

Five critical challenges

The current business market presents opportunities for enterprises of all sizes, spanning various industries and market sectors. However, with these opportunities come risks and challenges that, if not properly addressed, can lead to friction, business disruption, and a loss of a competitive advantage in the market.

What is business friction?

Unwanted distractions, increased delays, unexpected costs, and decreased agility that enterprises face when risks and challenges are not properly understood or proactively addressed.

Challenge #1:
Business evolution during market instability

Key to the success of any business or organization is the ability to evolve, expand, and grow over time to better meet the market's needs. As organizations expand (or refocus), changes in product or service offerings, employee talent or staffing levels, and partnerships are to be expected. When you add the complexities of navigating dynamic tariff, supply chain, distribution, and geopolitical issues, it's not hard to see where existing communications and network infrastructure could face significant challenges.

Changes to employee staffing levels, including the mix of employee talent, can increase the demand for robust internal communication systems and collaboration tools. These tools and systems must accommodate diverse work environments, including remote and hybrid setups for all types of employees, such as customer support teams, which are increasingly under pressure to provide 24x7x365 service to regional, national, and global markets. A limited or inflexible network infrastructure may not be able to scale to handle the added load or ensure seamless connectivity and data access for all employees.

Potential risk factors:

- **Changes in employee staffing levels, talent mix, locations, and collaboration requirements that exceed infrastructural capabilities**

- **Challenges in navigating dynamic trade, supply chain, and distribution channels (including for internal technology infrastructure)**

- **Technology deployments, service agreements, or operational management capabilities that lack flexibility and inhibit new business opportunities**

- **Data, compute, or network architectures that cannot readily support new technologies (e.g., IoT and edge computing in factory, warehouse, or distribution facilities) or limit the ability to capture, process, and extract actionable insights from data (no real-time decision value)**

Similarly, expanding or reworking partnerships or navigating expanded supply or distribution issues require secure and reliable communication channels with external stakeholders, including investments in cybersecurity to protect sensitive data and ensure compliance with international regulations. Furthermore, as competitive pressure mounts, the needs of a business can change more frequently, requiring agile and efficient communications systems that can support rapid decision-making and innovation. This may involve adopting cloud-based services, upgrading existing hardware, and implementing advanced data analytics to stay ahead in the market.

Challenge #2:
Business resiliency and agility

Business resiliency is a measure of an organization's ability to survive and thrive over time despite risks and disruptive threats to its operations, team, or brand. Achieving long-term success involves identifying and mitigating potential risks, establishing a plan for ensuring essential operations when risks cannot be avoided; being able to rapidly adapt and pivot when risks become disruptive events; and being able to rapidly recover and move forward even if that means a quick pivot to travel down a different path.

The digital era has erased borders, making the world a single, integrated marketplace and supply chain, offering overlapping threats and opportunities.

Potential risk factors:

- **Long-term contracts that limit agility and the ability to guarantee high levels of communications, application, and data access during periods of disruption or business evolution**

- **Underestimating the opportunity lost by not clearing tech debts and continuing to support tactical tech implementations introduced new**

digital tools but also restricted agility

- **Acceptance of infrastructure and/or service agreements that, while functional, don't add long-term strategic value and ultimately limit an organization's ability to rapidly adapt to change**

The key to business resilience is adapting quickly to new market realities. Today that means having the right technical infrastructure in place that supports, not restricts, business decisions.

A 2024 survey by Aryaka of network and security leaders found that 76% of respondents plan to eliminate MPLS within the next few years, with 10% having already done so.

(Source: Network World)

Digital transformation initiatives in the late 2010s and early 2020s allowed enterprises to strategically rethink and rebuild the digital infrastructures that would ultimately support the digitalization of business processes and the migration of apps, data, and compute resources to cloud services. 2020 also hastened the rapid, unplanned deployment of tactical products and technologies as organizations rushed to support remote workers, enable digital collaboration tools, and rework supply chains due to the pandemic and geopolitical issues. While needed, much of the deployed tech was ad-hoc, outside IT control (or funding), and not optimized or intended for long-term value. Rather than enabling agility, this wave of digital deployments filled servers, laptops, and mobile devices with unmanageable tools.

What is Tech Debt?

Tech (or technical) debt refers to the long-term consequences and accrued costs to correctly implement tactical, low-cost systems in place of strategic, more complete solutions that provide greater long-term business and economic value.

Challenge #3:
Deploying distributed data and compute resources to the cloud

The value of migrating data storage and compute resources from centralized data centers within an enterprise to cloud-based application servers is well established. The shift from monolithic, owned (or CAPEX) servers within the enterprise to decentralized, service-based (or OPEX) virtual servers in the cloud can improve the performance, scalability, and resilience of most enterprise IT systems.

Cloud-based data can be accessed from anywhere, while new applications — including virtual desktops — can be developed, deployed, and managed more efficiently in secure, virtual containers. This simplifies app migration across multiple cloud providers for increased reliability and redundancy.

Edge computing systems, deployed at the periphery of the cloud, can be used to capture, process, and derive real-time, actionable insights from remote devices such as mobile phones, security cameras, point-of-sale systems, or industrial IoT sensors on a manufacturing floor (the immediate decision value of data can degrade rapidly as it ages).

However, there are risks. Distributed data can become inconsistent without an up-front focus on shared taxonomies and structures to ensure data integrity. Regulatory and compliance issues can also be problematic, particularly as data privacy requirements can vary among (or even within) different countries or industries. While ease of data access into the cloud is a feature, that access can also expose data at rest or in motion to potential cyber threats.

Potential risk factors:

- **Applications requiring low, fixed latency may not be suitable for shared or high-latency networks**

- **Inconsistencies in existing data taxonomies and structures can complicate cloud deployments and limit the creation of a "single source of truth" to unify and increase the value of previously siloed data**

- **Cloud migrations often yield increased data collection, which drives accelerated app deployments, requiring a well-planned and agile strategy from the start**

- **Increased components and access points within an enterprise also increase the risk of an intentional or accidentally configured security breach**

While cloud-based technologies and services continue to mature, there is risk in equating market maturity with a consolidation or narrowing of options into a limited or one-size-fits-all approach.

For example, replacing unreliable WiFi or shared network services with a dedicated, reliable, and secure alternative would be ideal for improving the value of collaboration tools or collecting massive amounts of bulk data for storage and long-term predictive analytics modeling.

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But for data from industrial control, security monitoring, or consumer devices, deploying an edge computing model eliminates the need for centralized data collection while maximizing data's time-sensitive value.

Challenge #4: Implementing emerging technologies and applications

Deploying new technologies is essential for enterprises to remain competitive, attract the right talent, optimize business investments, and deliver great experiences to markets and customers. Areas of investment and deployment include a range of technologies and services.

The use of software-defined wide area networks (SD-WANs) can help an organization increase the scalability, reliability, and value of cloud-based data services while simplifying network management and reducing cybersecurity risks. Similarly, desktop and server virtualization tools can help enterprise teams simplify and secure the development, provisioning, and deployment of desktop applications and servers.

Artificial intelligence (AI) is quickly dominating decision-focused functions through generative AI (GenAI) tools and interactive, intelligent chatbots. Machine learning (ML) and predictive analytics are helping optimize and automate manufacturing devices and supply chains while improving marketing accuracy and customer engagement.

Internet of Things (IoT) sensors and edge computing are increasing the value of real-time data to improve operational efficiencies and drive more informed, contextual decisions. Blockchain and decentralized finance (DeFi) apps are helping Fintech firms secure financial transactions, manage financial assets, and improve the integrity of contract-driven transactions.

Augmented, virtual, and mixed reality devices (AR/VR/MR) are helping drive innovations in training, emergency response, consumer marketing, and interactive business and gaming systems, while

wireless, WiFi, and satellite-based emergency messaging are all bringing new levels of value to business and consumers.

Potential risk factors:

- **Undetected security vulnerabilities in new technologies can be exploited through malware, data breaches, and cyberattacks that place businesses and consumers at risk**

- **Unexpected issues with deployment and systems integration can lead to delayed rollout, significant incremental costs, and uncertain returns on investments**

- **The development, implementation, and ongoing management of new technologies and applications can require extensive training for IT and end users**

- **Uncertainty by users on the value potential risks of new technologies can lead to lower adoption rates and delayed or reduced success with related business goals (e.g., customer or employee satisfaction, operational improvements, and business insights)**

Risks associated with talent acquisition, retention, and skills development cannot be overlooked or underestimated. With an ongoing shortage of skilled tech talent already impacting organizations, key questions on how tech and apps are selected, deployed, used, and managed cannot be overlooked.

Challenges in how organizations recruit, retain, and continuously retrain (upskill) enough talent will only increase potential risk as the pace of technology development makes continuous training a time-consuming and costly task. While AI and automation tools can help improve the efficiency and productivity of IT staff, the same tools are increasing the pace of software development.

Challenge #5: Managing complex, dynamic environments

Complex architectures, disparate technology stacks across multiple suppliers, and challenges in finding and retaining the right skilled talent can be overwhelming, potentially limiting the ability of various organizations to aggressively pursue the technology deployments and strategies they feel are needed to become resilient, agile, and continue to increase their competitive edge in the market.
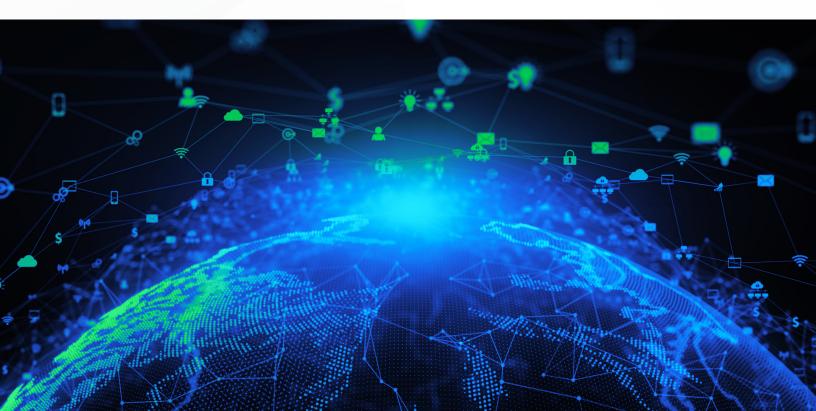
For technology and business professions alike, this is where questions of focus and attention are increasingly relevant:

Is it better for an IT organization to center on the deep technical knowledge and broad-based experience required to design, install, support, and secure highly complex hybrid architectures featuring a diverse mix of new and legacy technologies from multiple vendors and service agreements?

Or is it preferable to have an IT organization focused on strategic planning, cross-functional collaborations, and selecting the right external technology and support partnerships to proactively foster the agility and resilience necessary to ensure future business success?

Potential risk factors:

- **Enterprise infrastructure that is unmanageable or constrained by too many existing technology or service agreements that are not synergistic**

- **Legacy support contracts that are required but of limited value**

- **Difficulty in obtaining cost-effective support for legacy technologies**

- **Inconsistent SLAs that provide limited value**

- **Lack of skill depth or staff to adequately support all technologies**

- **Limited visibility into non-authorized, pandemic-era apps and devices that are still actively used by remote workers**

The pillars of enterprise-class connectivity for 2025 and beyond

As enterprises navigate an increasingly complex and dynamic business environment, the definition of enterprise-class connectivity must evolve beyond traditional metrics of bandwidth and uptime. Today's enterprise-class connectivity represents a comprehensive framework built on four essential pillars that together deliver the reliability, flexibility, and security needed to support modern business operations and future growth.

This framework recognizes that while basic connectivity remains important, the true measure of enterprise-class service lies in how effectively it enables business operations, supports innovation, and provides the agility needed to adapt to changing market conditions. These pillars work together to create a foundation for success that enterprises can build upon as they grow and evolve.

Enterprise-Class Connectivity Pillars

Reliable Performance

Focus on delivering consistent, secure network performance.

Simplified Solutions

Solutions that reduce complexity and enhance operational efficiency.

Performance SLAs

Agreements that prioritize business outcomes over penalties.

Comprehensive Coverage

Ensuring extensive network coverage and support for all locations.

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PILLAR: Reliable, consistent, and secure performance

The definition of network performance has evolved significantly: while uptime remains crucial, it represents just one component of a broader performance matrix that includes speed, reliability, consistency, and security — elements that together determine the actual business value of a network connection.

True enterprise-class reliability means delivering 24x7x365 availability with seamless backup transitions. This encompasses automated failover systems that maintain business continuity during network disruptions, along with redundant paths and technologies that ensure continuous operation. Organizations must implement proactive monitoring and maintenance to prevent potential issues before they impact operations, while geographic diversity in network infrastructure protects against regional disruptions.

Modern enterprise applications require consistent, predictable network performance characteristics. This means guaranteed bandwidth that maintains throughput levels during peak usage, minimal jitter to support real-time applications and video communications, and low, stable latency to ensure consistent application performance. Quality of service mechanisms must intelligently prioritize critical business traffic to maintain optimal performance for essential applications.

Security in enterprise-class connectivity means implementing the right protective measures for each operational requirement. This includes end-to-end encryption for data in transit, network segmentation to isolate sensitive systems and data, and advanced threat detection and prevention systems. Regular security audits and compliance monitoring ensure that security measures remain effective and up to date.

PILLAR: Solutions that reduce complexity and operational friction

Enterprise connectivity solutions must reduce, not add to, operational complexity. Modern solutions support seamless network migration paths that minimize disruption while enabling application modernization initiatives that enhance business capabilities. They integrate smoothly with existing systems while enabling future upgrades, all within a flexible architecture that adapts to changing business needs.

Today's solutions combine multiple technologies to deliver optimal results. SD-WAN deployment provides intelligent traffic management and improved reliability, while software-based solutions offer the flexibility and scalability needed for growth. Hyperconverged infrastructure simplifies data center operations, and cloud-native technologies enable rapid deployment and scaling of new services and capabilities.

The future-proof design of enterprise-class connectivity must maintain transparency while supporting various access methods. This means seamless integration of wired and wireless technologies, terrestrial and satellite connectivity support, and a balanced mix of dedicated and shared resources. Most importantly, unified management of WiFi, wireless, and emerging technologies ensures that the complexity of multiple systems remains hidden from end users while providing administrators with comprehensive control and visibility.

PILLAR: SLAs that set performance standards, not just penalties

Modern service level agreements (SLAs) must focus on business outcomes rather than simply defining penalty structures. This shift reflects the understanding that network performance directly impacts business success. Contemporary SLAs should define specific
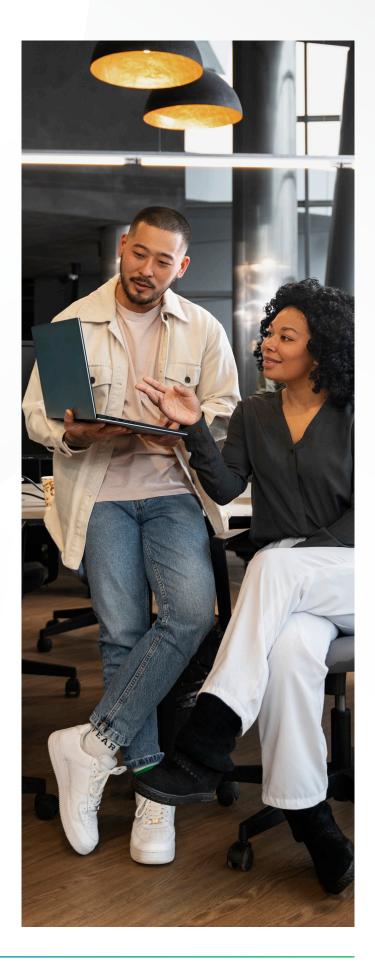
performance targets that align with business objectives, including user experience and application performance metrics. The focus must extend beyond technical parameters to measure actual business impact, supported by proactive monitoring and resolution processes.

Effective SLAs represent a partnership between provider and enterprise, with joint development of performance metrics and targets. Regular review and adjustment of service levels, coupled with a shared commitment to continuous improvement, ensures that both parties remain focused on mutual success rather than penalty enforcement. This collaborative approach recognizes that the true cost of service disruption lies not in financial penalties but in the impact on customer satisfaction and business operations.

PILLAR: Ubiquitous coverage and widely available support

Enterprise-class connectivity requires truly comprehensive coverage that extends from the network core to the enterprise edge. Modern enterprises need end-to-end network visibility and management, with consistent performance across all locations. This includes robust support for remote and edge computing requirements, along with seamless integration with in-building infrastructure and systems.

Providers must maintain ongoing network improvements through regular infrastructure upgrades and expansions. This includes the integration of new technologies and capabilities, coupled with careful capacity planning for future growth. Perhaps most importantly, carriers must minimize technical debt through strategic investments, ensuring that their network infrastructure remains capable of supporting evolving enterprise requirements.

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Asking the right questions

Success in deploying enterprise-class connectivity requires asking the right questions and making informed decisions that align with business objectives. This process involves careful evaluation of current needs, future requirements, and the organization's capacity to manage complex technology deployments.

Understanding your connectivity requirements begins with thoroughly assessing current operations and future goals. Organizations must look beyond simple bandwidth metrics to understand how their applications interact with the network, how latency and jitter impact business processes, and what level of redundancy is needed for business continuity. This assessment should carefully consider security and compliance requirements, as these factors often significantly influence connectivity choices.

When prioritizing business value and flexibility, organizations must consider both immediate needs and long-term strategic goals. This means understanding which connectivity improvements will impact business operations most and how chosen solutions will support future growth and innovation. The cost of network downtime or degraded performance must be weighed against investment costs, with careful consideration given to the level of scalability needed to support future initiatives.

Selecting the right technology partners has become crucial for long-term success. The ideal partner must demonstrate an understanding of business objectives beyond technical requirements, providing end-to-end solutions rather than individual components. Their track record in supporting similar organizations, ability to integrate with existing systems, and level of ongoing support all play critical roles in the partnership's success.

Organizations must also honestly assess their own capabilities and core competencies. This means understanding current strengths in managing network infrastructure, identifying areas where external expertise is needed, and evaluating the team's readiness to handle new technologies. Some organizations may find that certain functions are better outsourced to specialized providers who can deliver higher levels of service and expertise.

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The Spectrum Business experience—how we can help you today and tomorrow

Spectrum Business delivers comprehensive enterprise-class connectivity solutions designed specifically for Mid-Market and Large Businesses. Our approach combines robust infrastructure with expert support and management services, creating a foundation for business success that grows and evolves with clients' needs.

Our end-to-end connectivity offerings encompass everything from high-performance fiber and wireless networks to advanced SD-WAN and security services. We provide cloud connectivity optimization, comprehensive monitoring and management tools, and U.S.-based technical support and consultation. This integrated approach helps ensure that clients receive a complete solution that drives business value.

Our design, management, and support capabilities provide unified management across multiple networks and architectures. Expert teams handle solution design and implementation, proactive monitoring and maintenance, and continuous performance optimization. Regular reviews and consultations help ensure that solutions continue to meet evolving business needs, while continuous improvement recommendations help clients stay ahead of market demands.

Next Steps

The journey to enterprise-class connectivity begins with understanding your organization's unique needs and challenges. Our team of experts works closely with each client to conduct comprehensive needs assessments, develop customized solution proposals, and create implementation plans that minimize disruption while maximizing business value.

As your partner in enterprise technology, we're committed to delivering not just connectivity, but the foundation for business success in 2025 and beyond. Our nationwide support network, extensive infrastructure, and proven expertise ensure that your organization receives the robust, flexible, and secure connectivity needed to thrive in today's dynamic business environment.

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