*Powering clients to a future shaped by growth*

# Why Your Organization's Future Growth Depends On Strong Wholesale Partnerships

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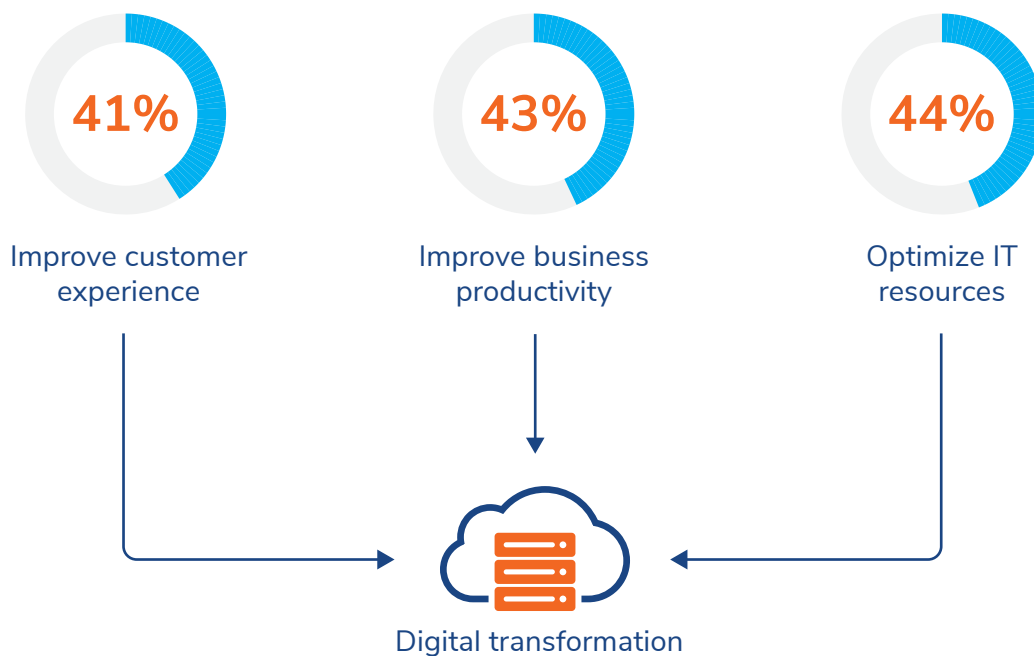
In Partnership with Frontier and Ciena

## FROST & SULLIVAN

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# Introduction

Businesses today face disruption in previously unimaginable ways. Enterprises are being pushed to substantially accelerate their digital transformation and are therefore increasingly adopting technology solutions that are critical to their digital strategy: Hybrid and multi-cloud services, video and web conferencing, automation, big data and analytics, Internet of Things (IoT), edge computing, network and application security, to name a few. But in order to truly succeed in their digital transformation journey enterprises need to take a strategic approach to networking and as a result, communication service providers have an increasingly fundamental role in supporting enterprises in their transformation journey.

## Business drivers accelerating organizations' digital transformation initiatives

**41%**

Improve customer experience

**43%**

Improve business productivity

**44%**

Optimize IT resources

Digital transformation

The wide area network (WAN) is the underlying infrastructure that is foundational for businesses to run all the aforementioned enterprise applications, hence having in place a highly reliable and available WAN is critical. In a recent Frost & Sullivan survey, U.S. IT decision-makers (ITDMs) stated optimizing IT resources, improving business productivity and improving customer experience, as the top three drivers (in that order) for their digital transformation initiatives. This clearly shows return on investment (ROI) for technology spending is increasingly measured by the true value it adds to the business.

Despite the commodity status of network bandwidth, it is the platform on which all enterprise applications run, and is, hence, the most important component of application delivery. In our survey, 74% of ITDMs stated their network services budget is going to increase in 2021. Businesses are increasingly taking a holistic approach to their network and IT investments to support long-term business goals, which create a unique opportunity for communication service providers (CSPs) to step-up their offerings.

As a CSP, for your organization to support the increasing need for high-speed and best-in-class performance in network services from enterprises, you need a reliable wholesale partner. End customers do not care how their services are delivered as long as it meets their quality and performance expectations; therefore you need to look for, not only high capacity network provisioning but a wholesale partner that can help you efficiently manage the cost and performance of your networks, ensuring seamless delivery of services across your customer base.

Wholesale relationships in the communication industry are as old as the networking industry itself. It is impossible for one single provider to own and operate a network across national or international markets they compete in.[1] Enterprise WAN operators do not want to manage multiple CSPs to support their regional, national, or global networks. The primary CSP that wins the enterprise business will need to leverage wholesale partnerships in order to offer a consolidated end-to-end WAN solution. Wireline and wireless carriers, cloud companies, content providers, internet service providers (ISP); all buy networks from wholesale providers to efficiently provision their networks for service delivery to end users (enterprise, consumer or both). However, the current era of wholesale partnerships are very different from the past. If you are a CSP, previously it was enough to partner with a wholesale provider that could complement your market reach allowing you to offer services in those metros where you did not have your own network. Today, you need wholesale partners that can allow you to offer service level agreements (SLAs) as seamlessly as though you owned the entire network to offer a consistent user experience.

In this paper, we provide an in-depth analysis of the enterprise market trends driving the need for high speed, high performance bandwidth, which in turn dictates the need for a valued wholesale partner; and critical factors to consider in a wholesale partner to deliver a seamless end-to-end user experience.

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# Market Trends Driving the Need for a Strong Wholesale Partner

## Vertical-specific Applications Driving Enterprise Demand for High Capacity Bandwidth

According to the latest annual Cisco internet report, by 2023 North America's average fixed broadband speed will reach 141.8 Mbps, up from 70.1 Mbps in 2019[2]. One of the key trends in enterprise networking is the constant migration from lower-bandwidth connectivity solutions to higher-capacity solutions to support the growth in bandwidth-hungry enterprise applications. Business applications like enterprise data storage and data mirroring require high-capacity connectivity to handle data-heavy workloads, but this is only the tip of the iceberg. Business applications are increasingly specialized and require superior network performance (low latency, high speed, less jitter) to keep up with latest market needs. As digitalization increases data and application traffic exponentially worldwide, because of workloads such as Industrial IoT (IIoT), big data-driven AI for predictable decisions and 24/7 digital business continuity, the core network, must be built to move and manage enterprise workloads at petabyte scale with ease. Across industry verticals, enterprises are finding the most innovative ways to serve their customers and partners, often through bandwidth consuming applications.

**The financial services** vertical needs ultra-low latency networks to support business-related, time-sensitive applications like trading apps with high security and performance control requirements.

**Healthcare companies** with multiple hospitals, clinics, and imaging locations along with the introduction of more telehealth demands, require a high level of control on their WAN, driven by the huge bandwidth requirements for electronic health records (EHR), large imaging and radiology files, and video demand of remote/virtual medicine.

**The education vertical** is, now more than ever, pushed to enable e-learning solutions in all education segments and create smart campuses while several government initiatives are contributing to the increasing need to enable secure, latency-sensitive, low-interference, mission-critical applications.

Hyper-connected industrial environments are leveraging IIoT to bring automation to factories and enable solutions like remote asset monitoring, autonomous vehicles and assets, data extraction from highly distributed assets, autonomous robotics, and at the end, smart factories. Manufacturing companies thus require network infrastructure to support business digitization and industrial automation projects. According to Cisco's internet report, by 2023, North America will have 5.0 billion networked devices/connections, up from 3.0 billion in 2018. Out of this, IoT connections will represent 50%.

At the very core of vertical applications and solutions lies the most foundational need for flexible, agile, reliable networks. To efficiently cater to these vertical market needs, as retail CSP, you will need a strong wholesale partner with the network reach and breadth of services to support the interconnection of remote locations and corporate headquarters for enterprise customers in a reliable and highly available way to enable bandwidth-consuming services. The right wholesale partner will provide a fiber-based, high-capacity (going up to 100G and 400G speeds), flexible solutions to transport data between multiple locations while at the same time insuring lowest possible latency and zero-interference.[3]

Furthermore, the wholesale partner will enable you to provide consistent SLAs to your enterprise customers at all sites independent of the territory and the network being used to access and transport data, be it your own network or the wholesale partner's network, ensuring seamless application performance.

## Emergence of Edge Computing

Edge computing pushes data processing closer to where the data is created, usually a network gateway or an end point. By bringing computing closer to the data source, edge computing enables latency sensitive computing, offers greater business agility through better control and faster insights, lowers operating expenses, and results in more efficient network bandwidth support.

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**47%**

have ongoing implementations
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**EDGE COMPUTING**

**40%**

plan to implement edge
computing in the next 2 years
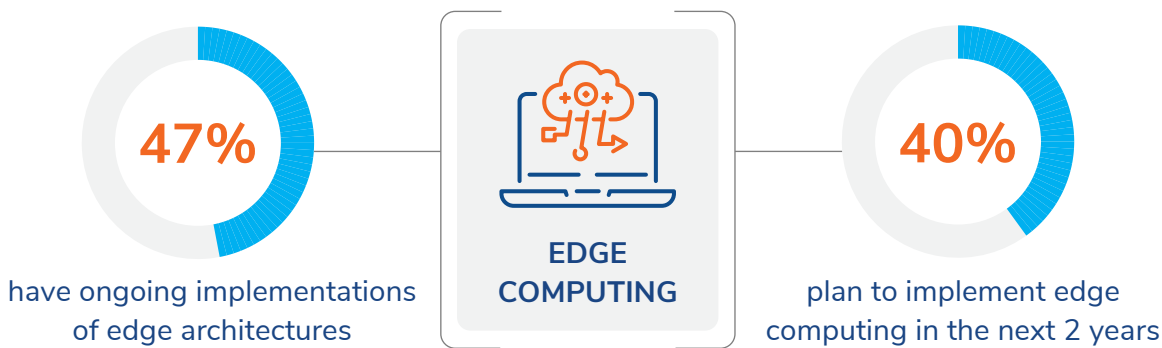
47% of IT decision makers in our survey stated they already have ongoing implementations of edge architectures, with another 40% of them stating they plan to implement edge computing in the next 2 years. As more low-latency use cases for edge computing continue to emerge and more workloads get moved to the edge, both cross-industry workloads such as those related to the hybrid office, as well as vertical-specific applications, IT managers and network architecture designers are increasingly considering how to best integrate edge computing deployments with the corporate WAN.

Centralized cloud resources (e.g. AWS, Azure or any other cloud provider data center) are not close enough to the end users to support evolving application needs. Hence, enterprise customers are looking for data center resources or edge computing solutions that minimize the distance between the user and the application service.

Partnering with a wholesale provider that has extensive network footprint in diverse strategic metro markets, and a comprehensive network services portfolio is critical for you as a CSP, to support disparate IT environments (on premises, edge, and multiple clouds), and tap into the networking needs arising from edge computing trends.

Similarly, latency is not exclusively relevant to edge computing. Due to COVID-19 pandemic, businesses are suddenly hit by the need to support a highly-distributed and mixed –in-office and remote- hybrid workforce. In Frost & Sullivan's survey, 85% of companies said above 25% of their workforce will be working from home on a part-time or full-time basis in the next couple of years, which means the great majority of enterprises are forced to make sure their workforce, either remote or in-office, is enabled with high quality access to enterprise cloud-based applications to guarantee optimal levels of productivity. For CSPs, this means that first-rate, local broadband is essential for cloud partners, residential and office workers. Your wholesale partner must provide you with deep, expansive metro-assets enabling you to control latency and provide high-quality home experience to hybrid work force with your broadband services.

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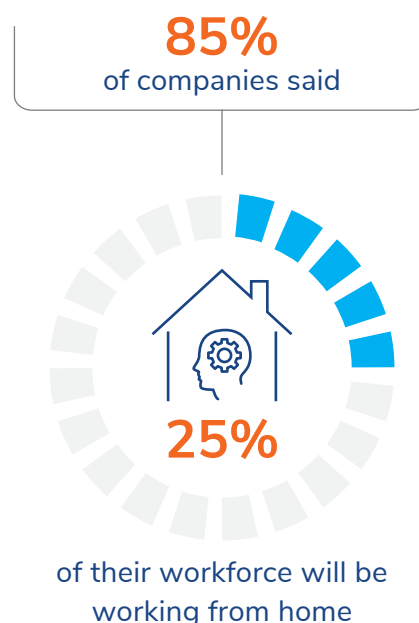
## Wireless Market Trends

According to Cisco's internet report, global mobile devices are expected to grow to 13.1 billion by 2023, while mobile speeds will more than triple, to an average speed of 43.9 Mbps by 2023. Per the same report, 5G speeds will be 13 times higher than the average mobile connection, reaching 575 Mbps.

Smartphones and emerging devices are the largest contributors to data consumption on mobile operator networks. Device growth, combined with increase in average data consumption, is fuelling mobile operators' investment in 5G rollout. Frost & Sullivan expects 5G connections in the United States to grow from 9.1 million in 2020 to 207.1 million connections (approximately 54.0% of all mobile connections) by the end of 2025.



**5G in US**

2020 — **9.1 million** connections

2025 — **207.1 million** connections
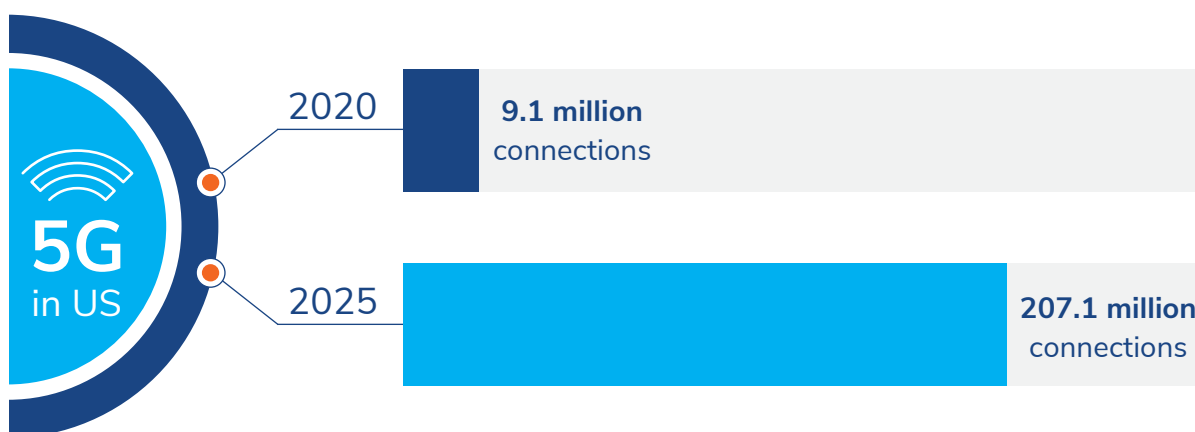
As a mobile network operator (MNO), for your organization to effectively deliver on the 5G promise, partnering with a reliable wholesale network provider is critical as fiber remains the primary choice for macrocell and cell site backhaul to support traffic growth on the network. Furthermore, as market specifications are being defined, and new markets are evaluated for service delivery, you need a wholesale partner that is willing to grow their networks (and related bandwidth) in an agile manner.

In current and future deployments, 5G involves three to six times the number of antennas required by 4G, each of them requiring to be fed with fibers. Very few wholesale providers have invested in building out fiber networks in key regions that support the bandwidth capacities required for 5G mobile backhaul. Having a wholesale partner that enables you to reduce time-to-market for 5G services means you can monetize your network investments sooner.

A noteworthy promise of 5G service is the ultra-low latency speeds. While fiber is extremely fast, latency is a function of distance, resulting in a delay of approximately 5 microseconds per kilometer. As requirements emerge for latencies approaching or less than a millisecond, the edge network and edge locations—a data center located closer to the end points—is key. The carrier central offices (CO) are increasingly evolving to become edge locations given the wide-spread deployment of COs. A wholesale provider with a dense fiber footprint, and edge locations in key market across the United States, can help you deliver effectively on the promise of 5G.

## Need to Effectively Connect Cloud Data Centers

Cloud is at the front and center of every business's digital transformation strategy. In Frost & Sullivan's 2020 Global Cloud Survey, 52% of the respondents say they have deployed cloud infrastructure as a service (IaaS), and 42% currently use hybrid cloud. Moreover, 43% of the respondents indicate they plan to deploy hybrid cloud in the next two years. The Covid-19 pandemic accelerated the pace at which U.S. enterprises are adopting cloud as it became apparent that companies with a strong cloud strategy were better prepared for business continuity in the face of adversity. In fact, ITDMs identified cloud-based applications as the main technology their organizations are planning to prioritize over the next two years.

However, the dynamicity of cloud computing is only as good as the networks that connect the cloud data centers and end users to clouds. If you are a cloud service provider, choosing a network partner that can support your cloud data center networking needs in terms of high-speed bandwidth, latency requirements and SLAs is critical. Continued scaling of cloud data centers and faster time-to-market in new locations to support the growth in enterprise cloud adoption trends requires a reliable network partner. The right wholesale partner with reliable SLAs, expansive local fiber network reach (and hence, better latency within metro markets) and support for high capacity bandwidth speeds can help your organization compete effectively in the enterprise market.

## Consumer or Residential Market Trends

According to Cisco's internet report the number of devices connected to IP networks will be more than three times the global population by 2023 and the consumer segment will represent nearly three-fourths of those. The U.S. holds the highest average of per capita devices and connections by 2023 with a striking 13.6 devices per capita.

The dynamicity of cloud computing is only as good as the networks that connect the cloud data centers and end users to clouds. If you are a cloud service provider, choosing a network partner that can support your cloud data center networking needs in terms of high-speed bandwidth, latency requirements and SLAs is critical.

Residential broadband internet service, Internet Protocol TV service (IPTV) and VoIP are some of the services that are driving IP traffic growth on CSP networks in the consumer markets. Broadband internet services represent the largest share of IP traffic on CSPs' networks, as internet connection speed drives the rate at which voice and video are accessed. Video and music streaming services, social media platforms, online gaming, video & web conferencing, connected home, and more recently virtual desktops—that are gaining pace in a COVID-19 world—are some of the applications putting a lot of pressure on CSP networks.

As a CSP, for your organization to ramp up the residential networks to support the growth in subscriber base and related traffic growth, partnering with a wholesale provider with high capacity fiber network that can handle the video traffic (broadcast HD video content, interactive applications such as gaming, web browsing and video on demand) is necessary.



## Critical Factors to Consider in a Wholesale Partner

As a wholesale customer, whether you are a CSP, MNO, cloud service provider (hyperscalers), or an ISP, you need a partner who not only has the breadth and depth of network reach and strong SLAs, but is agile and nimble enough to keep up with the fast-changing needs of your enterprise customers. The wholesale partner, while a separate company, needs to integrate their services in such a way that your end customers' (enterprises) user experience is seamless, and as though it is all one network and one company they are doing business with.

For your organization to thrive in the digital era, here are three critical considerations when evaluating wholesale partner:

## Network Services Portfolio

A wholesale partner needs to support your current and future growth in terms of market reach as well as portfolio of products and solutions. Specific features that will make a difference include:

**FUTURE GROWTH**

### Footprint and market reach:

To enable your company to scale the network in a seamless manner, your wholesale partner must have a deep fiber footprint. Additionally, your wholesale partner must provide you with expansive market reach through fiber availability across key metros in the U.S. domestic markets that represent large revenue potential such as those in California, Texas, Florida and Connecticut.

### Value-added attributes:

Breadth and depth of services must be accompanied by enhanced capabilities that reduce network complexity and costs, such as scalability on demand up to 400G, ability to deploy multiple services on a single network and a simple, efficient, repeatable architecture for all operating areas.

### Breadth and depth of services:

The right wholesale partner must have a comprehensive network services portfolio that includes a wide range of technologies and architectures to enable your business with the right solutions in the right markets, Ethernet, wavelengths and DIA as examples, supporting ultra-high bandwidths such as 100G & 400G services.

### Superior network performance:

Bandwidth may be driving the need for high capacity services, but there is an increasing emphasis on network performance. The right wholesale partner must provide your organization with a network built for agility, reliability and speed. Enabling business applications that are increasingly specialized and performance-sensitive requires low-latency, low-interference and high-reliability networks.

### Edge Colocation:

As edge computing gains traction and CSPs look to compete in this market, high-capacity networks must be accompanied with edge colocation in order to deliver the best experience for end users nowadays. Reducing latency has increasingly become a critical network need, therefore a trustworthy wholesale partner should provide you with a platform to meet these needs through edge location POPs and the right connectivity in place.

## Ease of Doing Business

Acquiring wholesale services can be a daunting experience if the process is time-consuming and complex. A strong partnership, on the other hand, provides a significantly improved customer experience for your organization as it offers:

**Agility:** Time is a luxury most businesses do not have as market conditions and needs change at light speed in the digital era. Your wholesale provider should help expedite time-to-market for your services, whether you are a cloud service provider or retail CSP. While agility is often associated with faster deployments times, agility is also gained with quick response times throughout the customer experience lifecycle. A wholesale partner that is highly responsive to trouble tickets and resolves issues quickly is critical for your organization to succeed.

**Predictability:** While most wholesale providers understand the needs of their customer, delays in service delivery is a common challenge while procuring networks. Few wholesale providers have invested in achieving delivery intervals that are predictable. Working with a wholesale partner who can deliver within the timelines promised in the contract can be a huge difference to how your organization competes in the market.

**Simplicity:** Wholesale partnerships are fairly simple once the network-to-network interfaces have been established. However, wholesale customers regularly run into issues such as delay in service provisioning in a particular metro, or complicated pricing terms in a market. Look for a wholesale partner that is completely transparent in terms of quoting, delivery and billing timelines. Achieving simplicity while doing business, when your business depends on it, can make a huge difference to your competitive positioning.
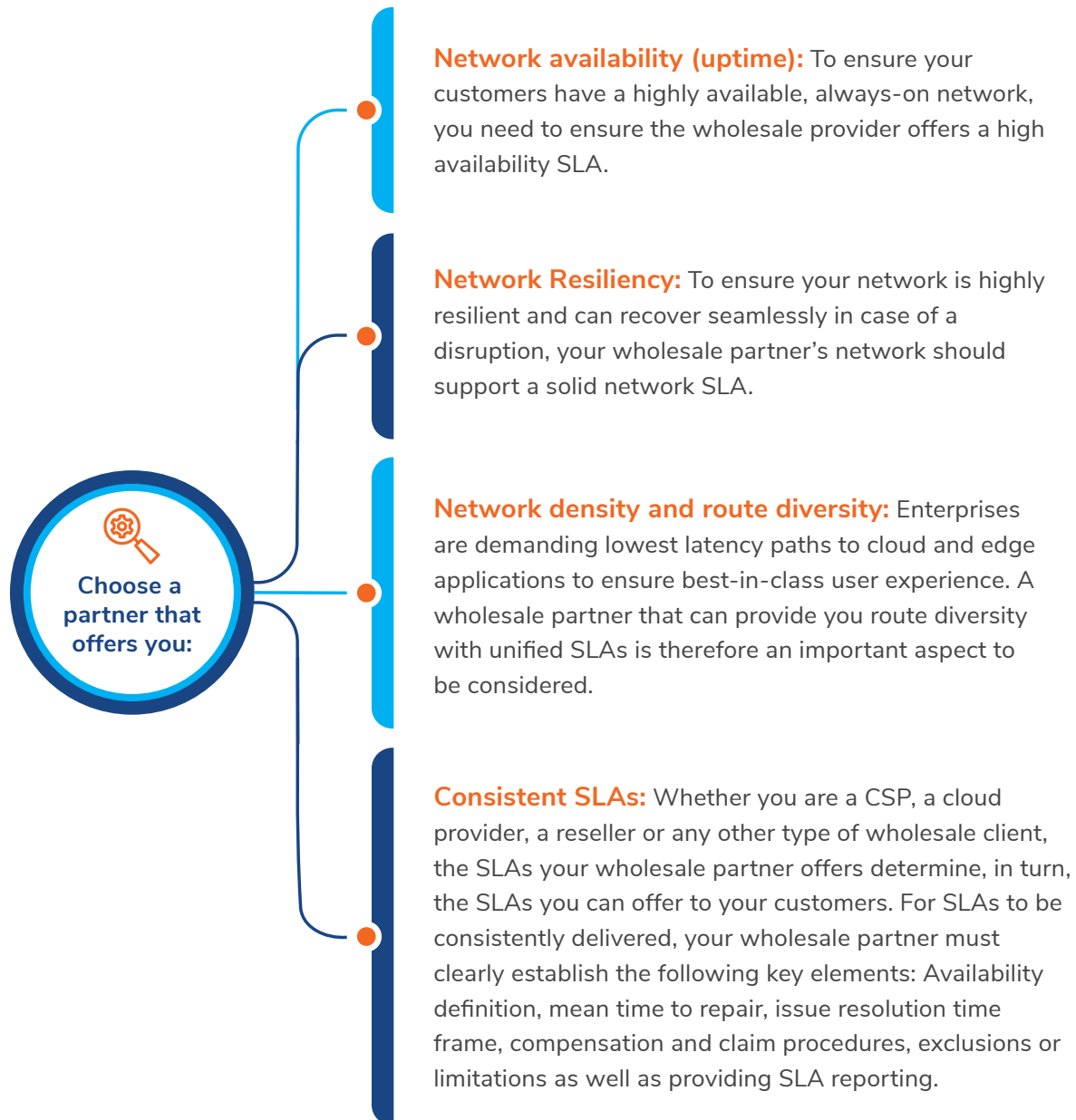
**Reliability:** To offer seamless services to your clients you need to rely on your wholesale partner, you have to be sure your partner delivers on its value proposition. A reliable partner has a history and heritage that draws from extensive experience in operating complex networks with the highest SLAs.

**Flexibility:** You cannot empower your business with an over-structured, unyielding wholesale partner. Circumstances change fast in a digital world and you need your partner to meet you where it matters the most to your business. The right wholesale partner is willing to adjust offers and processes to support you in both single-time needs as well as long-lasting necessities.

## Service Level Agreements

Providing a transparent experience to final end users, either enterprises or consumers, is one of the most important value propositions a wholesale partner can offer to its clients.

**Choose a partner that offers you:**

**Network availability (uptime):** To ensure your customers have a highly available, always-on network, you need to ensure the wholesale provider offers a high availability SLA.

**Network Resiliency:** To ensure your network is highly resilient and can recover seamlessly in case of a disruption, your wholesale partner's network should support a solid network SLA.

**Network density and route diversity:** Enterprises are demanding lowest latency paths to cloud and edge applications to ensure best-in-class user experience. A wholesale partner that can provide you route diversity with unified SLAs is therefore an important aspect to be considered.

**Consistent SLAs:** Whether you are a CSP, a cloud provider, a reseller or any other type of wholesale client, the SLAs your wholesale partner offers determine, in turn, the SLAs you can offer to your customers. For SLAs to be consistently delivered, your wholesale partner must clearly establish the following key elements: Availability definition, mean time to repair, issue resolution time frame, compensation and claim procedures, exclusions or limitations as well as providing SLA reporting.

# Conclusion

As enterprises speed up their digital transformation journeys underlying networks are being bombarded by data intensive applications. Hybrid working, edge computing and many other technology trends are changing the way people and industries improve efficiency and productivity and we can only guess what the future holds in terms of technological advancements.

The only thing certain about the future is that the networks will continue to be critical to enable the next cutting-edge technology. Preparing for the future requires partnering with a wholesale provider that is deploying the right fiber-based services today, is planning ahead for tomorrow's customer needs and can support the growing bandwidth needs with the low latency, high-capacity, highly-reliable networks required to deliver the best user experience for businesses and consumers. The right wholesale provider will allow you to scale up your operations in an agile way and reach your customers where and how you need.

Make sure you are empowered for your future growth.

For more information on how Frontier can support your growth strategy, visit www.frontier.com/wholesale

# Endnotes

1   The wholesale segment consists of wireline carriers, internet service providers, cable multi-service operators (MSOs); mobile operators; system integrators; content providers; and cloud companies.

2   https://www.cisco.com/c/en/us/solutions/collateral/executive-perspectives/annual-internet-report/white-paper-c11-741490.html

3   Carrier Ethernet services are a popular choice due to their architectural flexibility. The ability to carve out granular bandwidth options with Ethernet Virtual Circuits (EVCs) allows customers to procure larger port speeds and allocate EVCs for specific applications in a flexible manner.

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