

Flexible IP and Ethernet Services Power the Digital Enterprise

As bandwidth needs explode, businesses need high-performance, easily scalable connectivity services.

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Executive Summary

Technology has transformed the world. Customers expect exceptional, personalized service in every interaction. Employees and partners expect anytime, anywhere access to data and applications. Without a doubt, your network has more users, devices, applications, and services than ever before.

To meet the demands of a hyper-connected world, enterprises have embraced the cloud in all of its forms—public, private, and hybrid. The cloud delivers new levels of business agility by giving employees, partners, and customers easy access to their relevant resources while shifting the burden of building and managing complex IT infrastructure to expert cloud providers and their high-performance cloud computing Infrastructure as a Service (IaaS).

To effectively leverage the cloud requires bandwidth. Unfortunately, too many businesses are limited by legacy network services that were built for a bygone era—before organizations were largely distributed, before employees were mostly mobile, before business processes were predominantly digital, and before cloud services were an integral part of the IT fabric.

Introduction

Your business needs modern, reliable network services. You need a fast, flexible, and reliable network that can connect people and devices to their essential applications and data globally. You need network services that:

- **Meet complex enterprise connectivity needs.** People expect phone calls, videoconferences, collaboration tools, and other applications to just work—no matter where they are. Physical security, environmental controls, and other connected devices rely on uninterrupted connectivity.
- **Simplify application management.** While moving applications and business services to the cloud promises flexibility, behind the scenes coordination among multiple components is an absolute requirement. Workloads and applications must move seamlessly and without bandwidth constraints across private data centers and cloud instances. Enterprises need high-performance, flexible, and secure interconnections among their data centers and cloud providers.
- **Deliver uncompromising availability.** Businesses can't afford downtime or productivity losses because applications lag or transactions fail. The network must be low latency and minimize jitter, performing at a consistently high level and meeting all service levels.
- **Ensure security.** No organization is immune to the reputational or financial consequences of cyberattacks. Organizations must secure and protect network connections to all locations and to public, private, and hybrid cloud services. Applications that rely on both public and private cloud services pose additional challenges to ensure that the underlying data adheres to national and global security policies regardless of where the active instances operate.
- **Optimize costs.** IT must do more with less, and controlling IT infrastructure costs continues to be a priority. Automation can relieve the operational burden and allow the network to proactively adapt to changing workloads. That frees up IT staff and budgets to focus on innovations that deliver exceptional experiences to customers, help employees make better decisions, and capture new growth opportunities.

To meet the challenges of an increasingly digital business, organizations are turning to IP and Ethernet network services. With modern network services, they can connect all locations, deliver seamless connectivity to the cloud, and consolidate legacy WAN services. With flexible IP and Ethernet services, they can quickly and efficiently scale bandwidth—up or down—as needs change.

Zayo Delivers Unparalleled Performance and Flexibility

Zayo is a leading global communications infrastructure provider, delivering a synergistic mix of connectivity, colocation, and cloud infrastructure. Zayo provides enormous high-quality bandwidth to some of the world's largest service providers, media and content providers, finance, healthcare, and other enterprises.

Founded in 2007, Zayo has grown through acquisition and customer-driven demand, and today, it offers global reach across North America, Europe, and Asia. Zayo delivers high-performance, high-capacity, and secure services to meet the needs of today's technology-driven, distributed organizations.

- Zayo owns and operates a 114,500-mile network in North America and Europe. Zayo's wholly-owned backbone encompasses 8.9 million miles of fiber and connects to thousands of data centers, enterprise locations, carrier access points, media centers, financial exchanges, and cloud providers.
- Zayo is the second most peered network in North America and the third most peered network in the world, according to Dyn Research. By connecting directly with other top providers and key networks, Zayo minimizes network hops and ensures high-performance connections. The network is fully peered in IPv4 and IPv6.
- Zayo takes a proactive approach to managing network congestion without resorting to oversubscription. If sustained utilization is seen on parts of the network, Zayo augments bandwidth so customers experience predictable, consistent performance. Zayo's backbone is fully meshed so that traffic always takes the optimal route.

Zayo and Juniper Networks

Zayo's network relies on Juniper Networks routers to deliver high-capacity, highly available bandwidth services and extensive metro services over a fully protected and diverse IP/MPLS network. With Juniper, Zayo has built-in scalability, security, and bandwidth protection.

- Zayo uses Juniper Networks® PTX Series Packet Transport Routers in its converged supercore, which allows it to consolidate and optimize its IP/MPLS core, peering, metro, and converged IP and optical networks.
- Juniper Networks PTX5000 Packet Transport Router is used in the U.S., while the PTX3000 Packet Transport Router is used in Europe.
- In metro areas, the Juniper Networks MX2010 3D Universal Edge Router is used to deliver high-performance, high-capacity services.

“At Zayo, we are constantly striving to deliver innovative solutions to meet the dynamic business challenges our customers face every day.”

Chris Morley, COO, Zayo Group

IP Services That Deliver Tremendous Capacity and Performance

Zayo's portfolio of IP services offers tremendous capacity and uncompromising performance. With Zayo's Next-Generation Network, your business will benefit from tremendous scalability, high availability, extensive service reach, strong security, and flexible access connectivity.

Your organization can consolidate legacy WAN connectivity and easily connect your offices to your data centers and public cloud and Software as a Service (SaaS) providers. Use cases include Data Center Interconnect (DCI), cloud interconnect, and access and aggregation (e.g., mobile backhaul).

Zayo's next-generation IP backbone operates at 400 Gbps and connects to more than 750 data centers and 650 carrier points of presence (POPs) in eight countries. More than 24,600 buildings are on-net, making it easy to bring high-performance, low-latency bandwidth directly into your offices. Connectivity to Microsoft Azure, Amazon Web Services (AWS), Google public clouds, and over 50 other cloud and SaaS providers make it seamless to enable and support your hybrid or federated cloud strategy once you are “on-net” with Zayo.

Zayo offers a broad range of IP services, including:

- **Dedicated Internet and Cloud Connectivity**—Businesses can connect to the Internet and to cloud providers over the Zayo IP network at speeds ranging from 100 Mbps to 100 Gbps with on-demand scalability.
- **IP VPN**—Financial services, healthcare, and other businesses that require secure, private connectivity among multiple corporate locations to support high-bandwidth, real-time, or near-real-time applications can leverage Zayo's IP VPN service. The MPLS-based service supports multiple classes of services and prioritization schemes to handle all types of traffic, with SLAs for availability, latency, packet loss, and jitter. Customers can be confident in the secure transport because each customer's VPN is isolated from all other traffic.
- **IP transit**—For entertainment and media, carriers, and other enterprises with large volume bandwidth needs, Zayo offers IP transit services in the U.S., Canada, U.K., Germany, France, and the Netherlands. Some of the largest carriers and content providers in the world rely on Zayo IP transit services in North America and Europe. Flexible billing options include individual commit, aggregate commit, or commit plus burst.
- **DDoS mitigation**—Distributed denial of service (DDoS) attacks have intensified in size and frequency, but your organization can minimize the impact on business operations by rerouting potential attack traffic to Zayo's scrubbing centers in North America and Europe. When DDoS attacks are blocked quickly, your business can reduce downtime and avoid the added costs of bandwidth spikes from attacks. Zayo guarantees that all traffic will be scrubbed within 15 minutes.

Fast, Flexible, Cost-Efficient Ethernet Services

Zayo offers many advantages to customers by providing Ethernet in the WAN. With Zayo's portfolio of carrier-class Ethernet services, your enterprise can easily support any application and meet your connectivity needs, whether you are connecting to a mobile cell site, across a city or metro area, or around the world. Ethernet is ideal for applications that have high-bandwidth requirements, if you want to retain control over your own routing, or need to transport legacy application protocols. Cost-effective big Ethernet services make it easier to consolidate data centers and move to colocation facilities or major cloud providers.

Zayo's Ethernet services built on top of Juniper infrastructure offer the exceptional performance and consistency needed for today's increasingly digital businesses. Zayo's flexible bandwidth gives you granularity by site and can scale from 10 Mbps to 40 Gbps intercity, and up to 100 Gbps within the metro region.

Zayo offers a comprehensive portfolio of Metro Ethernet Forum (MEF) Carrier Ethernet 2.0 certified Ethernet services that provides point-to-point, point-to-multipoint, and multipoint-to-multipoint service. Services are adaptable to changing needs.

- **E-Line**—E-Line seamlessly connects remote locations and ensures interoperability between the LAN and WAN. Point-to-point or point-to-multipoint topologies are available, making it easy to connect branch offices.
- **Aggregated E-LAN**—E-LAN is ideal for organizations that need maximum redundancy and minimum latency, but don't know their immediate bandwidth needs and don't want to over- or under-commit. Businesses can eliminate guesswork and be confident in the network's ability to scale without burning through their budgets. Customers can simply commit to an overall bandwidth usage for their entire network and only pay for bursts if they exceed the committed level.
- **Private dedicated network (PDN)**—Zayo's PDN is ideal for organizations that need the highest levels of security, scalability, bandwidth, and latency, such as financial services and healthcare firms. All Ethernet equipment and fiber in the metro region are dedicated to a single customer, and the customer retains onsite control of all gear and maintenance. Scalability is guaranteed and won't be depleted by sharing with other applications. With bandwidth options ranging from 1 Gbps to 100 Gbps and beyond, PDN is ideal for organizations with growing bandwidth needs who want to ensure that capacity will be available when it's needed in the future.
- **Cloud Connectivity**—Zayo's CloudLink service provides direct cloud connectivity from your enterprise location or data center to your selected cloud providers over Zayo's private global network, delivering guaranteed network security, performance, and availability. Traffic does not traverse the public Internet, avoiding unnecessary congestion, variable performance, and unpredictable outages. This service is ideal for hybrid cloud environments because it delivers quick and cost-effective cloud access. Because Zayo has presence in the same data centers where cloud providers exist and where many customers have colocation services, you can be connected to any cloud provider or cloud on-ramp you want. You can have private connectivity to almost any cloud provider; you're not forced to get to a cloud exchange hosted at a data center with limited choices.

"Zayo's Ethernet services built on top of Juniper infrastructure offer the exceptional performance and consistency needed for today's increasingly digital businesses."

Tyler Coates, VP Ethernet Product Group at Zayo

One-Stop Shopping for Infrastructure Services

Zayo offers other services including cloud infrastructure and colocation to meet your comprehensive infrastructure needs.

Your enterprise can leverage Zayo's hybrid cloud infrastructure based on open Juniper platforms for increased flexibility and agility when connecting your on-premises data centers, colocation facilities, and cloud services into a seamless environment. With Zayo, you can choose the right mix to meet application workloads, disaster recovery needs, and IT infrastructure requirements while simplifying IT operations.

You can take advantage of Zayo Colocation (zColo) to enter markets more quickly and avoid the hassles of managing on-premise equipment. zColo has an extensive data center footprint and carrier-neutral connectivity to 66 of the world's largest ISPs and content providers.

Count on First-Class Customer Service

Providing exceptional communication services is all about the customer experience. Zayo is a different kind of provider to do business with, and that difference extends to our customer experience.

Zayo is taking the next step forward in customer service by providing complete transparency to service metrics and network performance. Zayo takes the responsibility of proactively identifying credits due for any commitment misses. Zayo provides customers with a report card for each service for the previous month, which provides a detailed view of service availability, latency, jitter, and packet loss metrics. This data is provided in an automated, standardized template each month.

Most service providers lock customers into contracts that are increasingly constraining when the business changes. But with Zayo FlexConnect, there's no contract, no commitment, and no termination fees. You can scale bandwidth in and out, up and down, and add new sites as needed. That makes Zayo bandwidth ideal for any business that wants to align its Ethernet connectivity with cloud usage, needs short-term connectivity, or has irregular traffic patterns. Flexible billing makes it easier to support connectivity for development environments, testing, seasonal traffic, or for backup and recovery. Customers only pay a low monthly port fee and for the data transfer usage.

Zayo also offers aggregate billing for E-LAN service, so you don't need to commit to a minimum bandwidth for each location individually. You can aggregate the bandwidth used at multiple locations, and pay for what you use. You can burst to full port speed at each location, but only commit to an overall minimum bandwidth—an aggregate total of all of your nodes. It has never been easier to plan for the needs of your network as a whole.

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Tyler Coates, VP Ethernet Product Group at Zayo

Simplify Service Life-Cycle Management

Buying and managing infrastructure services can be a frustrating experience. Zayo Tranzact makes it easy to shop for network services, compare pricing, and place orders, including lit services, dark fiber, colocation, and cloud infrastructure. Tranzact is the only platform in the industry that provides dedicated fiber service purchasing capabilities. Businesses can order services in two minutes or less.

You also can manage your sites and services through Tranzact. You'll have clear visibility into the status of all your services, including open trouble tickets, and access to Zayo's expert service desk. You can load all of your other telecom services, even from other providers, and manage your entire network through Tranzact.

Zayo by the Numbers

- Bandwidth, colocation, and cloud infrastructure
- Owned fiber network with 114,500 route miles
- 25,200 on-net buildings
- 100+ cloud connection options
- Global reach across U.S., Canada, Europe, and Asia

Conclusion—Experience the Zayo Difference

Technology innovation is creating new experiences and efficiencies at an unprecedented speed. As more people, devices, apps, and things are connected to your network, the only constant is the need for more bandwidth. Make sure that your business has the right network services to power your digital transformation and optimize your customer experience.

About Juniper Networks

Juniper Networks challenges the status quo with products, solutions and services that transform the economics of networking. Our team co-innovates with customers and partners to deliver automated, scalable and secure networks with agility, performance and value. Additional information can be found at [Juniper Networks](#) or connect with Juniper on [Twitter](#) and [Facebook](#).

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