



Network + Connectivity Solutions

It's All About the Network

From generative AI and machine learning to edge computing and big data analytics, emerging and evolving technologies continue to change how and where work is done. They're also helping organizations:

- + Facilitate rapid, secure, always-on access to and between cloud providers, data centers, mission-critical infrastructure, content distribution networks, sensors, endpoints, enterprises, employees, customers, and suppliers
- + Extend their geographic reach
- + Take advantage of new technologies
- + Drive growth and revenue generation
- + Foster greater collaboration across departments and locations
- + Keep pace with changing customer needs and preferences
- + And much more

But adopting and successfully leveraging these and other technologies requires more than digital transformation initiatives, corporate-wide mandates and some IT investments. Fast, reliable, and secure connections are the real enablers. They're at the heart of the digital infrastructure that powers today's transformative technologies. That's why the network and network-powered services that make those connections possible matter.

Fiber: The Preferred Network Option

Cable- and satellite-based networks still have their place in the world. However, fiber optic networks are better equipped to help companies power their digital transformation — and enjoy the benefits of it.

Fiber outperforms other technology options, such as copper or microwave, in terms of speed, high bandwidth, low latency, low jitter, anti-interference, and high reliability. These are all among the attributes critical for enabling the benefits of digital transformation.

They help deliver better customer and user experiences. They facilitate more efficient communication and collaboration. They enable organizations to remain agile and competitive in a fast-changing, always-on world. Fiber optic networks

also support emerging technologies, such as 5G, providing the consistent upload and download speeds, scalable bandwidth and low latency needed.

Yet another benefit of fiber: it enhances data security — a particularly crucial factor given the ever-growing incidences of cyber threats and increasing regulations regarding data privacy. Unlike traditional cable connections, which can be susceptible to electromagnetic interference and signal interception, fiber transmits data using light pulses. This makes it difficult for hackers to intercept or tap into the connection without causing noticeable disruptions.

Fiber is also more reliable than cable. With cable, data is transferred via coaxial television cable comprised of copper, aluminum and plastic and is designed to conduct electricity. The copper wiring is more susceptible to storms or electrical interference than fiber is.

Of course, not all fiber is the same. There's lit fiber, which refers to fiber-optic cables that are "lit" by a service provider to transmit data. Dark fiber refers to excess network fiber that was installed by network providers but isn't turned on or "lit." Cables lie dormant, waiting for businesses to lease them and light them to run as their exclusive, private networks.

Contracting with a network service provider for lit fiber offers the convenience of quickly and effortlessly establishing fast, reliable internet connectivity. An organization can offload all network management and maintenance responsibilities to the service provider, making this a plug-and-play option. It's important to note that lit fiber contracts specify how much bandwidth will be provided. If an organization needs to increase its network bandwidth, the service provider may increase the organization's cost for that added capacity.

With dark fiber, an organization leases the fiber and then acts as its own service provider. It is responsible for buying and maintaining the equipment necessary to light and manage the dark fiber, and for monitoring, managing and servicing all network components. Dark fiber works best for organizations that need virtually unlimited bandwidth and want total control over their network.

Some organizations may require both lit and dark fiber. If a network provider can offer both, that's the way to go.

Network Must-Haves

Where a network exists makes a difference too. Ideally, you want your network closest to your users to eliminate delays and increase performance. You may also need a network that supports things like geographic reach and better communication and collaboration between distributed workforces and locations.

The number of miles that comprise a network should be considered, but it's the connections available on the network that make the biggest difference.

For example, does the network connect data centers and can any of them serve as edge data centers, which can reduce network latency, increase processing loads, and transmit data faster?

Is there access to points of presence (PoP), which are located near large Internet exchange points (IXPs) at which they have peering agreements? (Peering allows multiple networks to connect and exchange traffic. It can help cut costs and increase the resilience, speed and performance of networks.)

To minimize potential problems, you ideally want a service provider that owns, operates, controls and maintains its own network, including the "last mile" connection. That's the connection between the provider and your business location.

Of course, even the most extensive network doesn't do any good if it goes down. For maximum reliability, go with a network that maintains SLA-backed uptime and performance. It should employ leading-edge technologies and equipment, and feature a redundant architecture with a network topology and protocols that ensure there's no single point of failure.

Network Services

Every organization is unique and has its own networking needs. And no single service can do it all. Some companies may require a layer 2 service, referred to as Ethernet connectivity, which provides low latency. Others may need layer 3 service, which provides wide area network (WAN) connectivity, connects different local area networks (LANs) and provides access to the internet. Increasingly, many organizations are interested in a Secure Access Service Edge (SASE) solution, a unified, cloud-native service that converges SD-WAN and SSE functions to simplify network and security stack management.



What's important is to choose the connectivity services that will best meet your organization's needs. That means you need to know what those needs are. To help do that:

- + Create a list of connectivity use cases. Involve as many different departments and locations (if relevant) as possible to ensure you're getting a comprehensive assessment of needs. Take into consideration how these needs are affected by your organization's strategic objectives and short- and long-term plans.
- + Know what your budget parameters are, as well as resource availability.
- + Assess current pain points, as well as future concerns.
- + Determine priorities regarding network services. How important are things like speed, security and flexibility?

Once you've compiled a needs list, compare it against the various services available to determine if and how they can meet them. As previously noted, the network underlying these services is important. The following services, offered by US Signal and powered by its robust fiber network, are among the services to consider.

US Signal Network Services

[Dedicated Internet Access](#)

[Multiprotocol Label Switching](#)

[Ethernet Transport Services](#)

[Virtual Ethernet Services](#)

[SD-WAN](#)

[Secure Access Service Edge \(SASE\)](#)

[Managed Router](#), [IP Monitoring](#) and [Quality of Service \(QoS\)](#) can easily be added to your service to give you greater peace of mind.

US Signal also offers Direct Transport services, including [Optical Wave](#), [Private Line](#), [Virtual Cloud Connect](#), and [Direct Fiber Access](#). Each leverages the benefits of US Signal's wholly owned and operated network, including 9,500 miles of lit fiber across 10 states, redundant SONET architecture, leading-edge technologies, and over 225 data centers and POPs.

Experience the Power of the US Signal Network

Comprised of 9,500 miles of fast, reliable fiber, the US Signal network extends through 10 states, including Virginia — the internet capital of the world. It encompasses nine US Signal data centers in key Midwest cities, metro rings in 20 Midwest markets, access to over 225 data centers and POPs, and redundant Tier 1 peering relationships. Built on industry-leading technologies, it's designed to handle failures before they affect your business.

[**Learn more about the US Signal Network at ussignal.com/services**](https://ussignal.com/services)