The Evolving Data Center Market

FIBER IS THE KEY TO SCALABLE AND SUSTAINABLE GROWTH

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Fiber Broadband ASSOCIATION

When fiber leads, the future follows.

INTRODUCTION

The U.S. data center market is expanding at a pace few other infrastructure sectors can match. With over 5,000 data centers at the start of 2025[1], demand continues to rise as cloud services and use of artificial intelligence (AI) and machine learning (ML) become standard for businesses of all sizes, enterprise IT environments grow more complex, and everyday activities generate increasing volumes of data.

For years, data center development clustered around a handful of major hubs such as Northern Virginia, Silicon Valley, and parts of Texas. Today, however, rising land costs, power constraints, concerns over water availability and congestion in those traditional markets are pushing developers to look elsewhere. Secondary markets, edge locations, and rural regions are increasingly part of the conversation, particularly where fiber infrastructure and reliable power are already in place. According to industry reporting, demand for fiber connectivity in emerging data center hubs like Memphis and Salt Lake City has surged dramatically, rising over 4,300% and 348% year-over-year from 2023 to 2024.[2]

At the center of this shift is fiber. Regardless of geography or facility size, fiber provides capacity, reliability, and scalability that modern data centers require. It is not simply one option among many; it is the foundational infrastructure that makes data center growth possible and sustainable as development expands into new regions across the country.

While all this connectivity is fiber-based, the specific fiber architectures supporting data centers differ from those used in fiber-to-the-home (FTTH) networks. Data centers increasingly rely on advanced fiber designs, including multi-core and hollow-core fiber, to support extreme capacity, ultra-low latency, and dense interconnection between facilities. Single-mode fiber, which underpins FTTH deployments nationwide, remains the foundation for access networks connecting homes, businesses, and communities to these data center ecosystems.

MARKET DYNAMICS DRIVING DATA CENTER EXPANSION

Several long-term trends are driving growth in data center demand. Enterprises continue to migrate workloads to the cloud, relying on off-site facilities for storage, redundancy, and application hosting. At the same time, consumer demand for bandwidth has permanently increased due to video streaming, e-commerce, and hybrid work models. Bandwidth purchased for data center connectivity surged by nearly 330% between 2020 and 2024, reflecting how hyperscale and AI-related traffic growth is pushing the limits of existing network capacity and reinforcing the need for robust fiber infrastructure.[3]

Traditional data center hubs are feeling the strain. Power availability, real estate costs, and construction timelines are becoming limiting factors, prompting developers to seek locations with fewer constraints. This has accelerated interest in regional and distributed facilities that can support enterprise workloads closer to users.

Industry analysts project that data center network infrastructure alone could grow into a $20 billion market, underscoring both the scale of opportunity and the importance of robust underlying connectivity.[4] This growth is also driving increased demand for fiber between facilities, with the U.S. necessitating an increase in fiber route miles from 95,000 to 187,000 by 2029 in order to scale efficiently.[5]

According to the Zayo Bandwidth Report, U.S. backbone and metro fiber traffic has grown by more than 40% year-over-year in key emerging data center hubs, reflecting escalating interconnection needs. This growth highlights why traditional copper and most wireless solutions struggle to scale for enterprise or AI workloads, reinforcing the need for fiber investment.[2]

WHY FIBER IS THE RIGHT TECHNOLOGY FOR DATA CENTERS

Data centers place some of the most demanding requirements on communications infrastructure, requiring purpose-built fiber architectures capable of supporting massive scale, ultra-low latency, and continuous operation. Advanced fiber technologies, including multi-core and hollow-core fiber, are uniquely suited to meet these needs, while single mode fiber continues to serve as the backbone connecting data centers to regional networks, enterprises, and end users.

Fiber offers unmatched capacity and a clear upgrade path. As data center traffic grows, operators can upgrade electronics rather than rebuilding physical networks, making fiber a long-term, scalable solution.
Latency and reliability further separate fiber from other technologies. Data center networks are designed around redundancy and predictable performance, both of which depend on dense, diverse fiber routes. Wireless and satellite solutions, while useful in specific circumstances, introduce variability that most data center applications cannot tolerate.

Reflecting this trend, Corning and Meta recently announced a multiyear, up to $6 billion agreement to accelerate U.S. data center buildouts supporting AI and next-generation applications. Corning will supply advanced optical fiber, cables, and connectivity solutions, expanding its North Carolina manufacturing footprint to support Meta's AI infrastructure. This partnership demonstrates how fiber innovation and domestic production enable scalable, high-performance data centers while creating skilled jobs and strengthening regional supply chains.[6]

These realities are reflected in how modern projects are planned. New developments, such as Nokia's innovation campus in Canada, will fuel innovations in "AI-powered networks, data center networks, quantum-safe infrastructure, and next-generation 6G technologies"[7]— all of which rely on high-capacity, fiber-based connectivity. Emerging AI

applications and edge computing models place unprecedented demands on network infrastructure. AI workloads often require real-time processing of massive data streams, demanding low-latency, high-capacity connectivity between data centers and edge nodes. Fiber enables this by providing dense, high-speed interconnections capable of handling multi-terabit traffic with minimal latency.

Together, these fiber technologies create a clear path for future network applications. As these technologies mature, access networks built on single-mode fiber can interconnect seamlessly with higher-capacity data centers and interconnection fiber, ensuring long-term compatibility and protecting infrastructure investments made today.

ECONOMIC OPPORTUNITY FOR RURAL COMMUNITIES AND PROVIDERS

As data center development expands beyond traditional hubs, rural and smaller communities are gaining new relevance. In many cases, these regions already possess the assets developers value most: available land, access to power and water, and fiber networks built to serve local residents and businesses.

Data centers can act as economic anchors, bringing construction activity, technical jobs, and long-term operations roles. They also attract related businesses that want to locate near reliable digital infrastructure. Cooperative-owned utilities and rural ISPs are increasingly part of this story, particularly as data center developers look for trusted local partners who understand local needs and can support large-load interconnections. Co-ops across the country are adapting infrastructure, negotiating interconnection agreements, and positioning themselves to capture economic benefits from this growth.[2]

Communities that have invested early in fiber are especially well positioned to benefit from data center growth. Brambleton, in Loudoun County, Va., is a master-planned community situated in one of the nation's fastest growing data center hubs. Planners incorporated fiber into long-term infrastructure plans, aligning residential, commercial, and utility buildouts with regional digital investment trends. As a result, Brambleton's proximity to major fiber infrastructure and data centers has increased its attractiveness to residents and businesses alike, demonstrating how early connectivity planning can help communities capture economic opportunity alongside digital infrastructure expansion.[8]

Larger-scale partnerships, such as Corning and Meta's $6 billion commitment to expand U.S. data center infrastructure and fiber production, also highlight the potential for fiber-related investments to create skilled jobs and stimulate local economies in communities hosting manufacturing or data center facilities.[6]

FBA research on opportunities for rural providers highlights how communities with existing fiber, power access, and real estate are increasingly engaging with developers to support regional and edge data center deployments. By leveraging cooperative-owned fiber networks and utility infrastructure, these communities can attract data-intensive businesses while creating new revenue opportunities for local providers.[9]

The growth of smaller, regional facilities—including micro data centers and edge locations—expands opportunity even further. Local ISPs and electric cooperatives can leverage existing fiber, substations, and real estate to support new data center models and diversify revenue.[8] This dynamic creates a reinforcing cycle. Fiber investment makes regions more attractive to data center developers. Once established, data centers drive further demand, strengthening local networks, and supporting long-term growth.

CHALLENGES AND CONSIDERATIONS

Despite the opportunity, several challenges can slow data center development. Power availability is often the most immediate constraint, particularly as facilities grow larger and more power dense. Workforce shortages also remain a concern, as both fiber deployment and data center operations depend on skilled technicians and engineers.

Middle-mile connectivity is critical. Communities with strong local fiber networks may still struggle to attract data centers without sufficient regional transport. FBA's research on middle-mile investment highlights how gaps in long-haul connectivity can limit economic development, create higher costs for consumers, increase latency, reduce speeds and leave rural areas disconnected.[10] Addressing these challenges requires coordination among providers, utilities, policymakers, and developers. Communities that plan ahead by mapping fiber assets, assessing power capacity, and investing in middle-mile routes, are better positioned to compete.

CONCLUSION

The data center market is evolving, and its next phase of growth will not be confined to a few established hubs. As demand rises and constraints tighten in traditional markets, new regions —many of them rural —are emerging as viable and attractive locations for data center development.

Fiber, including advanced fiber types such as Hollow-Core and Multi-Core, is the common thread enabling expansion. Its capacity, reliability, and upgradeability provide the foundation modern data centers require, regardless of size or location. For rural communities and providers, fiber represents more than connectivity; it is an economic development asset that can support jobs, attract investment, and enable long-term growth.

With thoughtful planning and strong partnerships, fiber and data centers can reinforce one another, creating durable digital infrastructure that benefits communities for decades to come.

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