

Edge and Regional Expansion for Data Centers

Drive growth, deliver predictable performance and simplify operations

As demand for low-latency, AI-driven and data-intensive workloads accelerates, data center operators (DCOs) are expanding beyond their core metros into regional and edge locations to stay competitive. These expansions are no longer optional; they're driven by tenant expectations for proximity, performance and rapid scalability. But modernization and expansion introduce new constraints, from infrastructure availability and network reach to operational fragmentation and inconsistent performance across regions.

Lumen helps DCOs overcome these challenges by providing a scalable, on-demand connectivity foundation purpose-built for regional and edge growth. With extensive network reach, pre-engineered connectivity options, and flexible bandwidth that scales with tenant demand, Lumen enables faster site activation, simpler operations, and more predictable performance—helping DCOs shorten time to revenue, reduce operational risk, and confidently support high-growth workloads wherever expansion is needed.

Challenges

Infrastructure constraints

As DCOs expand into regional and edge locations, network availability becomes a primary constraint. Patchy regional infrastructure can delay site selection and deployment.

Lack of network reach and performance

Edge and regional sites are driven by latency-sensitive workloads. However, many regional markets lack dense, high-quality network paths, making it difficult to deliver consistent performance back to clouds, cores and users.

Fragmented connectivity and operational complexity across regions

Edge expansion introduces network fragmentation: multiple local carriers, inconsistent SLAs, bespoke builds, and complex operational models. This raises costs and slows tenant onboarding, especially when scaling across many small or mid-tier markets.

Scaling fast enough to meet AI and edge demand

AI and distributed workloads require connectivity that can grow incrementally as demand evolves. Fixed-capacity and rigid network designs make it difficult to add inference capacity across multiple sites without redesigning the network.

Regulatory, data sovereignty, and regional market variability

Edge deployments vary by region due to regulatory requirements, data sovereignty rules, geography, and market structure. DCOs must adapt network designs and interconnection strategies region-by-region, increasing planning and execution complexity.

Expansion Challenges	How Lumen Helps
Infrastructure constraints	Network-ready locations, backbone proximity
Latency & performance at the edge	Bringing compute intensive workloads to the edge of network endpoints with low latency fiber
Fragmented regional connectivity	Single-provider, standardized connectivity
Speed of expansion & activation	Pre-built fiber, scalable bandwidth
Regional regulatory variability	Flexible, region-aware network design

Solutions - Infrastructure

Lumen® Wavelengths

High-capacity optical transport service that delivers dedicated connectivity across metro and long-haul routes, enabling scalable data center, cloud and AI workloads on the Lumen ultra-low-loss fiber network. Ideal for east-west workloads.

Lumen® Wavelength RapidRoutesSM

Prioritized 100G and 400G connectivity between high-demand markets and data center hubs. Built for AI-scale east-west traffic, these predefined routes offer predictable performance and delivery in as little as 20 days on qualifying site pairs. Rapid Routes corridors are enabling up to 2x faster deployment timelines vs. Lumen traditional delivery models.¹

Lumen® Managed Optical Fiber Networks (MOFN)

MOFN is well-suited for DCOs who want fiber ownership advantages (control, scale, economics) while relying on Lumen to monitor, manage and maintain the physical network, helping to reduce operational burden.

Lumen® Dark Fiber

Dark fiber gives DCOs dedicated, unlit optical fiber they fully control. It's ideal when traffic demand is high and predictable, performance must be ultra-deterministic, and the DCO wants maximum control, long-term cost efficiency, and the ability to monetize interconnection at scale.

Solutions - Connectivity

Lumen® On-Demand Services

Flexible, scalable internet and network services with options for consumption-based pricing models and self-service adjustability. Ideal for dynamic north-south workloads.

- **Internet On-Demand** to rapidly deploy dedicated internet connectivity across locations
- **IP VPN On-Demand** for multi-site and cloud connectivity using SLA-backed MPLS with on-demand scalability
- **Ethernet On-Demand** to connect point-to-point locations and clouds with private bandwidth up to 400 Gbps

Lumen® Dedicated Internet Access

DIA is recommended for fast, reliable, and cost-effective public internet access for operations, tenants, or edge sites without the scale, control, or performance requirements of private optical infrastructure.

Lumen® IP VPN

Secure, SLA-backed private network service that delivers high-performance, managed routing. Consider for secure, segmented connectivity between data centers, enterprise customers, or remote sites without the cost or complexity of dedicated optical infrastructure and while still enabling traffic isolation, reliability, and SLA-backed performance.

Lumen® Ethernet

High-performance, SLA-backed Layer 2 connectivity service. Use Ethernet for simple, scalable, and cost-effective private connectivity between data centers, cloud on-ramps, or customer environments—without the complexity or long-term commitment of optical infrastructure.

¹ Based on Lumen internal data of deployment timelines for complex wavelength builds vs. Lumen traditional delivery models, March 2026.

Results

Expand fast, without network constraints

Lumen helps accelerate edge and regional expansion by connecting DCOs to network-ready locations through on-net buildings, dense regional metro networks, and long-haul fiber. This enables fast site activation and consistent scaling across markets without waiting on new network builds.

Predictable edge performance

Lumen delivers deterministic performance at the edge through low-latency routes, regional aggregation and a high-capacity backbone. Predictable latency across edge, core, and cloud environments helps ensure AI and distributed applications perform as intended.

Unified network, simplified operations

A unified, end-to-end network footprint replaces fragmented multi-carrier environments, anchored by owned fiber, regional metros, and on-net data center connectivity. Standardized services and predictable routing help reduce vendor sprawl, eliminate bespoke designs, and lower operational overhead across markets.

Workload-driven, AI-ready scale

Lumen enables incremental AI inference growth across distributed sites without re-architecting as demand increases. An owned fiber backbone, dense regional metros, and route control allow inference to be added site-by-site, and elastic connectivity can adapt as workloads change.

Enable compliance without compromising scale

Lumen enables region-aware network designs that support data sovereignty and regulatory requirements without fragmenting the network. Backbone scale, regional route control, and standardized connectivity allow DCOs to localize traffic where required while maintaining a consistent operational model across markets.

Why Lumen?

Lumen is a trusted connectivity partner, operating one of the world's largest and most secure networks with 24/7 monitoring and threat mitigation powered by Black Lotus Labs®. With direct on-ramps to 2,200+ third-party data centers and 125+ cloud providers, Lumen simplifies network ecosystems and delivers performance customers can rely on. Built for demanding environments, Lumen provides scalable connectivity with near real-time visibility and consistent, reliable performance

[Connect with a Lumen representative](#) to explore flexible solutions for your evolving needs.