
CONNECTING AMERICA'S RURAL COMMUNITIES WITH OPEN NETWORKING

# NEXTLINK INTERNET POWERS 400G-READY MIDDLE-MILE WITH IP INFUSION OCNOS

## Executive Brief

Nextlink Internet, one of the fastest-growing ISPs in the U.S., needed a network that could scale with its rapid expansion to nearly 100,000 customers across 11 states. The engineering team set out to simplify the core with Segment Routing (SR-MPLS), build a cost-effective, 400G-ready transport layer using IP over DWDM (IPoDWDM), and ensure seamless integration with existing automation workflows.

To achieve this, Nextlink adopted an open networking model based on IP Infusion's OcNOS® Network Operating System and Edgecore Networks whitebox routers, which offered carrier-grade performance, streamlined automation, and freedom from vendor lock-in.

## Challenge

Nextlink's rapid expansion introduced new scalability, operational, and business demands. The engineering team identified three primary drivers for modernizing the network:

1. **Scalability:** Nextlink's expanding subscriber base and new Fiber to the Home (FTTH) rollouts significantly increased bandwidth demand. The network needed a streamlined upgrade path to 100G and 400G, along with modern traffic engineering to prevent bottlenecks.
2. **Operational Efficiency:** The engineering team required full support for open, standards-based NETCONF/YANG automation. Avoiding proprietary Network Management System (NMS) lock-in was critical for long-term agility.
3. **Vendor Flexibility & Cost Control:** Relying on traditional vendors (Cisco, Juniper, Nokia) created

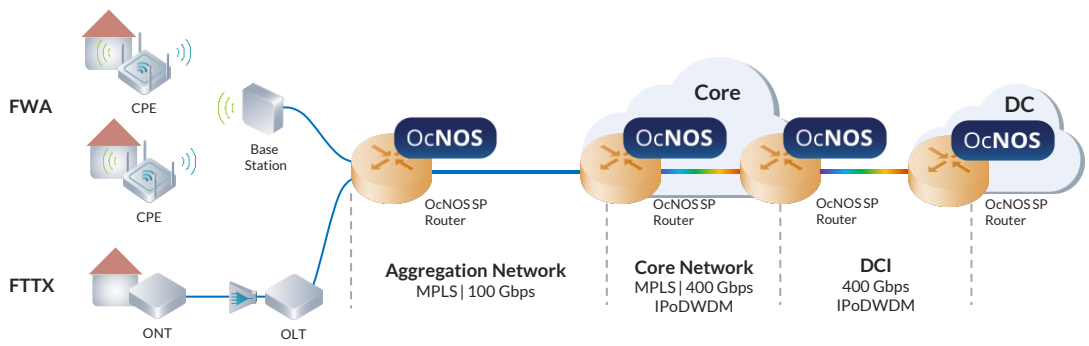
challenges around cost structure, responsiveness, and hardware lock-in. Nextlink sought an open alternative that reduced both CapEx and OpEx while providing greater architectural freedom.

## Solution

Nextlink deployed a fully open, disaggregated architecture, addressing each strategic driver with high-value capabilities.

1. **Middle-Mile MPLS Aggregation:** Subscriber traffic from Fixed Wireless Access (FWA) and fiber access networks is aggregated using **OcNOS-SP-MPLS**, delivering a resilient and feature-rich MPLS transport fabric for the middle-mile. OcNOS runs on the **Edgecore AS7316-26XB** whitebox router, a temperature-hardened platform (-40°C to +65°C / -40°F to +149°F) that is ideal for remote outdoor deployments. It offers 300 Gbps of switching capacity with a flexible port configuration (16x 10G SFP+, 8x 25G SFP28, 2x 100G QSFP28).

2. **Core & IPoDWDM Transport:** For the high-capacity network core and data center interconnects (DCI), Nextlink deployed the **OcNOS-SP-PLUS**, which offered modern traffic engineering via Segment Routing (SR-MPLS) and high-capacity, simplified transport via IP over DWDM (IPoDWDM). OcNOS is deployed on the **Edgecore AS7535-28XB**, which delivers 800 Gbps of switching capacity and the high-density 400G QSFP-DD ports necessary for IPoDWDM. Nextlink now can use **400G ZR+ coherent optics** directly in the router ports. This design eliminates an entire layer of dedicated optical transponders, simplifying the network, reducing power, and lowering the Total Cost of Ownership (TCO) for high-speed transport.




Nextlink Internet Reference Network Topology

3. **Seamless Integration:** OcNOS supports full NETCONF/YANG models and open APIs, enabling smooth integration into Nextlink's automation workflows. The familiar, industry-standard CLI further reduced the training curve for engineers transitioning from traditional platforms.

4. **Superior TCO and Freedom from Lock-In:** By separating software (OcNOS) from hardware (Edgecore), Nextlink gained full flexibility to select best-of-breed platforms. IP Infusion's perpetual licensing model strengthened long-term cost control. **The result: At least 20% TCO savings compared to proprietary alternatives.**

## Summary

By transitioning to an OcNOS-powered open network, Nextlink addressed its immediate scalability and automation requirements while building a long-term foundation for growth. The deployment delivers modern SR-MPLS capabilities, 400G IPoDWDM transport, and open automation workflows, all while reducing TCO by 20% or more. Nextlink now operates a flexible, high-performance, and automation-ready network positioned to support continued broadband expansion across rural America.

> **"IP Infusion's OcNOS software, paired with Edgecore hardware, is now part of our production environment supporting middle-mile and data center transport. In these targeted use cases, the platform's flexibility, support for open standards, and cost structure align well with our goals to expand broadband access throughout the Heartland while maintaining operational agility and performance."** - Cameron Kilton, Chief Technology Officer at Nextlink Internet.

> **"Nextlink Internet's rapid growth and commitment to delivering unlimited, high-quality internet align perfectly with our mission to provide scalable, open networking solutions. OcNOS empowers Nextlink to optimize its network performance while significantly reducing costs, and we're thrilled to support its expansion across 11 states."** – Kiyo Oishi, CEO for IP Infusion.

## Contact for More Information:

For more information on the OcNOS software, please contact sales@ipinfusion.com

## ABOUT IP INFUSION

IP Infusion is a leading provider of open network software and solutions for carriers, service providers and data center operators. Our solutions enable network operators to disaggregate their networks to accelerate innovation, streamline operations, and reduce Total Cost of Ownership (TCO). Network OEMs may also disaggregate network devices to expedite time to market, offer comprehensive services, and achieve carrier grade robustness. IP Infusion network software platforms have a proven track record in carrier-grade open networking with over 500 customers and over 10,000 deployments. IP Infusion is headquartered in Santa Clara, Calif., and is a wholly owned and independently operated subsidiary of ACCESS CO., LTD. Additional information can be found at http://www.ipinfusion.com



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