



CASE STUDY:  
AMPLEX CHOOSES  
**DISAGGREGATED TRANSPORT INFRASTRUCTURE**  
TO MODERNIZE ITS BROADBAND NETWORK



Amplex Internet is a North American ISP dedicated to providing high-quality internet services to underserved areas. With a diverse range of connectivity technologies, including FTTX and fixed-position wireless, Amplex connects both urban and rural communities. Their network transformation achieved 100Gbps speeds, ensuring scalability, streamlined management, and integration of innovative features. The implementation seamlessly connected with existing legacy routers, showcasing Amplex's commitment to technological advancement and expertise in building efficient networks.

## CASE STUDY

# AMPLEX CHOOSES DISAGGREGATED TRANSPORT INFRASTRUCTURE TO MODERNIZE ITS BROADBAND NETWORK

## Highlights

### Challenges

- Surge in Broadband Traffic
- Increasing Network Complexity
- Support of Latest Routing Features
- Interoperability with Legacy solutions
- Supply chain disruptions and Soaring Component Costs

### Solution

- UfiSpace S9500-22XST 1/10/25/100G White Box Router
- IP Infusion OcNOS Aggregation Router
- netElastic vBNG

### Results

- Migrated to 100Gbps Speeds for Core and Distribution Networks
- Implemented SR-MPLS, and Enhanced Network Resilience
- Seamless Interoperability with Legacy Solutions
- Accessed Enriched Ecosystem of Disaggregated Solutions
- Simplified Service Delivery and Network Maintenance

Amplex Internet is a North American internet service provider (ISP) committed to delivering high-quality internet services to underserved areas, overlooked by other ISPs. Serving thousands of subscribers in Ohio and surrounding states, Amplex continues to bridge the digital divide and connect communities. The company offers a diverse range of connectivity technologies to both consumer and enterprise customers, including FTTX and fixed-position wireless, which allows it to deliver high-quality internet services to both urban and rural areas.

## Challenges

Amplex aims to provide their customers with an exceptional internet experience. With the company operating both fixed and wireless networks, their infrastructure introduces additional layers of complexity. Here are the major challenges Amplex' team was trying to address when looking for the new transport network infrastructure:

- ▶ **Surge in Broadband Traffic** has prompted Amplex to seek infrastructure solutions that can be easily scaled to accommodate the rapid growth. Amplex was looking to migrate its core and distribution network to 100G speeds.
- ▶ **Increasing Network Complexity** has driven Amplex to explore options to enhance network visibility and streamline service delivery.
- ▶ **Transition from a Switched Network to a Routed Network** and support for SR-MPLS, necessitated the adoption of more modern solutions that encompass these essential features.
- ▶ **Interoperability with Legacy Solutions** from Juniper and Ciena was crucial for Amplex as they planned to implement gradual upgrades to their network.
- ▶ **Supply Chain Disruptions and Soaring Component Costs** have urged Amplex to seek to minimize the risks associated with feature releases and protracted hardware delivery times.

In light of the pandemic, Amplex's team has recognized the necessity for a more flexible approach to network scaling and maintenance. Evaluating all the options, Amplex opted for disaggregated and software-defined infrastructure which offered them with the best balance of scalability, features, and cost.

## Solution

The disaggregated solution was proposed by IP Architects and delivered by EPS Global with a combination of UfiSpace S9500-22XST white box routing platforms, IP Infusion OcNOS Aggregation Router with MPLS, netElastic's vBNG (virtual Broadband Network Gateway), as well as other high-density white box switches.



## Solution Highlights

### UfiSpace S9500-22XST

#### Specs:

- ASIC: Broadcom Qumran-AX
- Switching Capacity: 300Gbps
- CPU: Intel Broadwell-DE
- Class C timing accuracy

#### Interfaces:

- 4x 100M/1G RJ45 Base-T
- 8x 1/10G SFP+
- 8x 10/25G SFP28
- 2x 40/100G QSFP28
- Timing: GNSS, 1PPS, 10MHz, ToD, BITS

#### Environment:

- PSU: 1+1 redundant
- Operating Temp: -40°C to 65°C (-40°F to 149°F)
- Operating Humidity: 5% to 85% (RH), non-condensing

### IP Infusion OcNOS Aggregation Router

#### Layer 2 Switching:

- Layer 2 forwarding and bridging
- IEEE 802.1Q VLANs and Q-in-Q
- LAG, LACP 802.3ad
- MSTP, STP, LLDP, VLAN Translation
- VXLAN/EVPN

#### Layer 3 Routing:

- IPv4 and IPv6 unicast routing
- OSPFv2, OSPFv3 with LFA
- MP-BGP, ECMP
- IS-IS, BGP/BGP+, BGP-LU, VRRP, VRRPv6

#### MPLS:

- SR-MPLS
- Label Distribution Protocol (LDP)
- Resource Reservation Protocol (RSVP)
- Layer 2 VPN, Layer 3 VPN
- MPLS DiffServ, MPLS OAM

Amplex chose to deploy the UfiSpace S9500-22XST into the majority of their network locations. The compact 1U platform is based on the Broadcom QumranAX (QAX) silicon and offers 300Gbps of switching capacity, 1/10/25/100G service ports, and complies with Class C timing accuracy standards, guaranteeing dependable connectivity throughout Amplex' infrastructure.

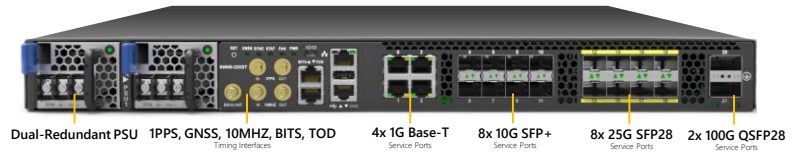


Figure 1. UfiSpace S9500-22XST (Front)



Figure 2. UfiSpace S9500-22XST (Back)

Amplex had to ensure new routers could offer the capacity to keep up with growing traffic as well as enhanced ASIC performance to handle MPLS labeling. They have conducted rigorous testing, where UfiSpace's S9500-22XST platforms proved to perform well in their network and were subsequently deployed as MPLS Provider Edges (PE) in the access/aggregation layer of Fixed Wireless Access and FTTx.

Along with UfiSpace's white box platforms, Amplex has installed 1/10/100G high-density white box switches. This deliberate selection empowers Amplex to effectively meet the distinct demands of each site, all while maintaining a cost-efficient approach to network expansion thanks to access to wider ecosystem of disaggregated solutions.

For enhanced network functionality, Amplex leveraged IP Infusion OcNOS, which was installed on every white box platform, providing comprehensive routing features. This implementation granted Amplex access to advanced capabilities such as SR-MPLS, Multiprotocol BGP, and L2VPN/VPLS, enabling seamless connectivity between customer sites and the vBNG. L3VPN has been deployed to effectively handle management and voice traffic within the network. Thanks to the implementation of TI-LFA Fast Reroute, Amplex has achieved impressive sub-50 millisecond failover times, ensuring quick recovery in the event of link failures and maintaining uninterrupted service delivery.

To serve customer sites, Amplex deployed netElastic's vBNG software. The vBNG solution would handle all traffic terminations, AAA (Authentication, Authorization, and Accounting), and other services, regardless of the access technology utilized. This streamlined



approach greatly simplified and standardized the process of authenticating, assigning IP addresses, speeds, and delivering services to customers, which improved operational efficiency and enhanced the customer experience.

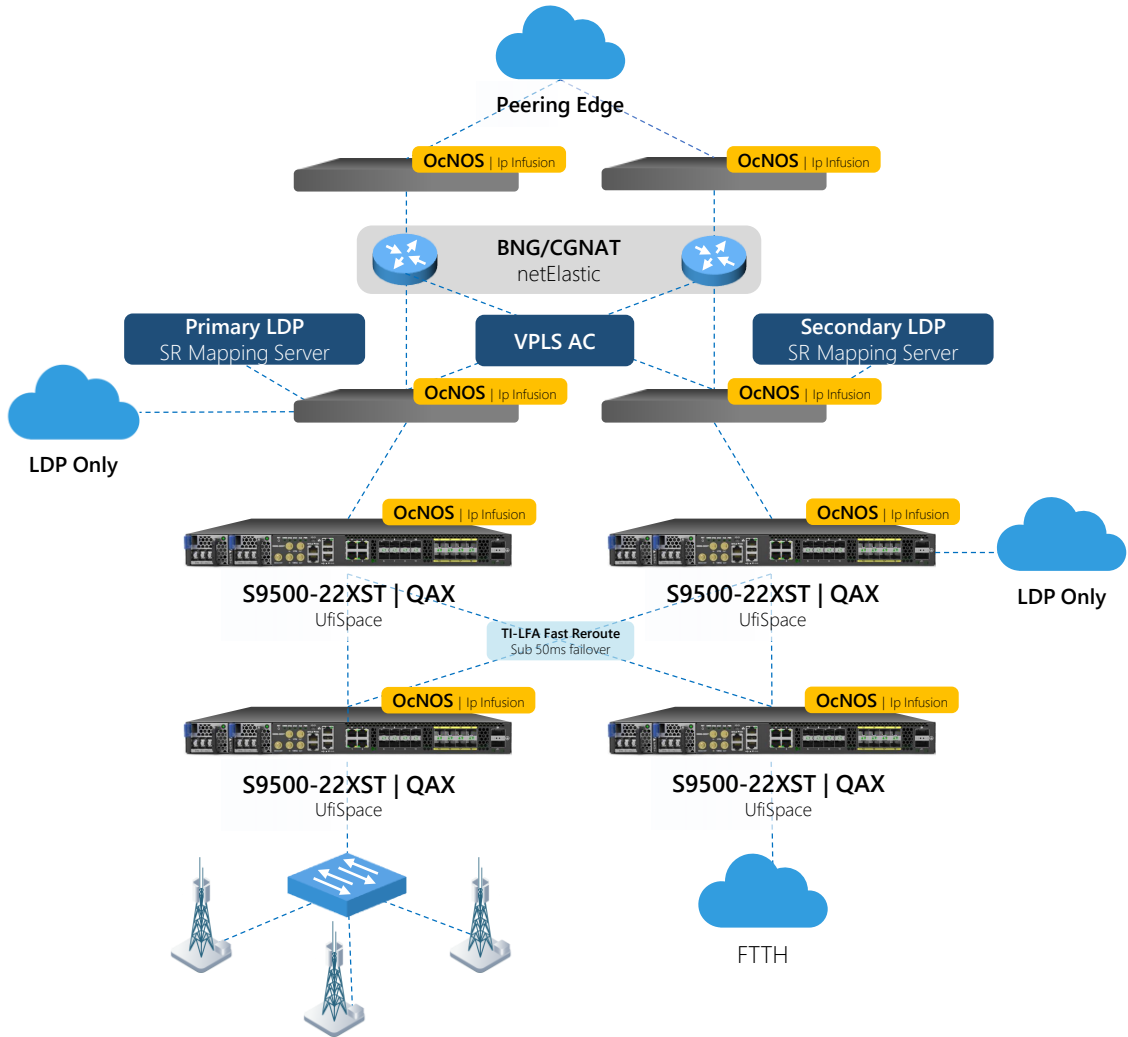


Figure 3. Amplex Internet Broadband Network Deployment Topology with Disaggregated Solutions from UfiSpace, IP Infusion, and other open networking vendors.

## Results

Through this deployment, Amplex has successfully transformed their network infrastructure, achieving 100Gbps speeds for their core and distribution networks, and ensuring futureproof scalability, simplified management, streamlined service delivery, integration of the most innovative network features, and independence for network expansions. Notably, the implementation process exhibited exceptional compatibility, as the new solution seamlessly connected with the existing legacy routers from Juniper and Ciena. The accomplishment showcases Amplex's commitment to technological advancement and expertise in building networks.



## About IP Infusion

IP Infusion, the leader in disaggregated networking solutions, delivers enterprise and carrier-grade software solutions allowing network operators to reduce network costs, increase flexibility, and to deploy new features and services quickly. IP Infusion is headquartered in Santa Clara, California, and is a wholly owned and independently operated subsidiary of ACCESS CO., LTD.

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## About EPS Global

EPS Global was established in 1999 and is a leading value-added distributor, delivering open disaggregated network and wireless solutions to customers across EMEA, the Americas and Asia. We provide technical support, hardware configuration and bundling of solutions for hassle-free, consolidated shipments. We have local language and currency support in each of our 28 locations, and we provide stock availability from our regional distribution hubs worldwide, minimizing lead times. For more information see [www.epsglobal.com](http://www.epsglobal.com).

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## About UfiSpace

UfiSpace provides end-to-end disaggregated transport network solutions and is the leading pioneer in open networking platforms. Our passion and dedication towards customer service and engineering excellence has brought UfiSpace to the forefront of 5G technology innovation.

### CONNECT WITH UFISPACE

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