

DQE Communications Creates Next-Generation Mobile Backhaul Network with Juniper Solutions

Summary

Company:

DQE Communications

Industry:

Service Provider

Challenges:

Deploy a Layer 3 IP/MPLS network to create a multiservice backhaul network that consolidates existing 2G and 3G with LTE and supports exponential increases in mobile traffic

Selection Criteria:

Feature-rich, innovative MPLS network to support massive growth of 2G, 3G, and LTE traffic

Network Solution:

- MX480 3D Universal Edge Router
- ACX2000 Universal Access Router
- Junos Space Services Activation Director
- Professional Services

Results:

- Multiservice IP network for 2G, 3G, and LTE service deployed
- Exponential growth in mobile backhaul traffic cost-effectively supported
- Operations simplified with end-to-end management

As businesses and consumers alike demand more mobile services and richer content, operators are challenged with ensuring that they can support the staggering quantities of traffic going across their networks. At the same time, they need to cost-effectively maintain support for older 2G and 3G services. Mobile backhaul networks are the key to ensuring that traffic flows smoothly between the carrier's backbone and the edge, and this requires guaranteed quality of service for crucial circuit and voice services.

Challenge

DQE Communications, a subsidiary of Pittsburgh-based Duquesne Light Holdings that provides mobile backhaul and metro Ethernet services, won a contract from a major nationwide carrier to provide the backhaul for its mobile device traffic. This particular carrier uses 4G LTE technology, so any network handling this traffic would need to be high performance and operate at peak efficiency.

To support existing 2G and 3G services, along with the new IP-based LTE traffic of its major new customer, DQE needed to migrate to a Layer 3 MPLS transport network.

Selection Criteria

The backhaul contract called for DQE Communications to support more than 300 cell towers in Western Pennsylvania, an area that poses challenges due to its rugged terrain. "It's mountainous in that part of Pennsylvania, and we had limited space, so we needed a solution that could handle not only the rough conditions, but also the tight space constraints," says Nathan Embery, director of IP services at DQE Communications.

DQE Communications considered purchasing more of the same routers it had previously used in its network to accommodate the new backhaul requirements. However, Embery and his team were concerned that the product was nearing the end of its lifecycle. Moreover, the incumbent equipment did not support L3 MPLS. So with technical and supply chain concerns, DQE Communications decided to build a next-generation network, rather than expand its legacy backhaul infrastructure.

"Our decision to purchase the ACX Series for our mobile backhaul solution was driven by the OpEx considerations. The ease of use from having Junos OS end to end—from the core all the way through to the edge—is a significant benefit."

Nathan Embery, Director of IP Services, DQE Communications

Solution

The company evaluated products from several different vendors. "After intensive testing and evaluation of a couple of different products from different vendors, we decided to go with Juniper Networks, which would give us the best blend of flexibility for the exploding bandwidth demand," says Embery.

DQE Communications' mobile backhaul network deployment consists of more than 30 10-Gbps rings to support 310 cell site towers. Juniper Networks® ACX2000 Universal Access Routers are deployed at the cell towers. The ACX Series routers allow DQE to rapidly deploy access services, creating a seamless, end-to-end service delivery platform. The ACX Series also supports Juniper Networks Junos® operating system, extensive Layer 2 and Layer 3 features, IP/MPLS with traffic engineering support, and rich management capabilities. In addition, ACX Series routers are environmentally-hardened, small form-factor devices, making them ideal for external cabinet deployment.

"Our decision to purchase Juniper's ACX Series for our mobile backhaul solution was driven by the OpEx considerations," Embery says. "The ease of use from having Junos OS end to end—from the core all the way through to the edge—is a significant benefit."

Embery adds that what made the ACX Series access router an outstanding choice for DQE is the fact that it enables MPLS all the way to the network's edge. "Because of that, we can manage the network topology more easily," he says. "It's much more flexible in the way that we can design our access network."

In addition, DQE deployed the Juniper Networks MX480 3D Universal Edge Router to provide primary aggregation of the ACX2000 access routers. Powerful switching and security features give the MX480 router unmatched flexibility and reliability to support advanced services and applications.

The entire network is managed through Junos Space Services Activation Director, which helps ensure error-free service provisioning and network monitoring. DQE can use a simple, scalable interface to design, validate, and manage its MPLS and carrier Ethernet services.

"Junos Space allows us to manage services, as opposed to just managing network devices," Embery says. "It's much easier to know when a service is impacted by an event vs. just a series of network devices."

To accelerate migration to the new network, DQE engaged Juniper's Professional Services Center of Excellence. A cross-functional team of experts ensured that the ACX Series routers

were turned up, tested, and operating. Professional Services also delivered design and testing support to deploy Juniper's mobile backhaul solution in DQE's lab and production environments. Additionally, the team integrated ACX Series routers with DQE's existing network elements and performed functionality testing, integration verification, and acceptance testing. Throughout the project, close coordination with DQE's team facilitated proactive and in-depth knowledge sharing.

Results

According to Ted Zobb, senior vice president of business development at DQE Communications, the company is about halfway through an 18-month deployment cycle that should wrap up in the first quarter of 2014, and the rollout is going smoothly.

DQE Communications was most concerned about being able to support end-to-end MPLS as well as to scale up for future needs, and it got both with the Juniper network. "We've got MPLS to the edge and it all runs through a single Junos operating system," Embery says. "With Junos OS, we're using the same operating system in the core as well as the edge, making the network a lot more flexible and easier to manage."

Zobb adds that what made Juniper stand out was the strong partnership the company brings along with its products, which DQE wasn't able to find with other vendors. "Juniper was willing to work with us hand-in-hand and provide us all the support that we need" he says. "Also very important is the quality and scalability of the Juniper products, which will fit our needs well into the future."

Next Steps and Lessons Learned

As DQE Communications expands its mobile backhaul capabilities, its partnership with Juniper will allow it to continue to build the best network for its customers by being able to scale its offering and meet its service-level agreements.

"One of the things that's really been exciting is our business has grown into serving nationwide wireless carriers, providing backhaul services to their cell towers and their other buildings and structures—wherever they need to have bandwidth provided to their network," Zobb says. "We've been very fortunate to expand our network to fit the needs of the wireless backhaul. And Juniper enabled our support team get the wireless backhaul implemented quickly and efficiently."

For More Information

To find out more about Juniper Networks products and solutions, please visit www.juniper.net.

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