Infinera®

SSE Enterprise Telecoms' High-capacity Infinera Network Enables 5G Across the U.K.

A Networking Case Study

SSE Enterprise Telecoms is one of the fastest growing network operators in the U.K. It offers high-capacity bandwidth services to enterprise and public sector customers as well as wholesale connectivity services through its 300-strong service provider community, including mobile network operators addressing the all-important high-performance 5G transport market. With an extensive 20,000+ km fiber network that spans the U.K., connecting more than 80 commercial data centers and over 300 other points of presence, SSE Enterprise Telecoms has the capability to support services across the country.

SSE Enterprise Telecoms invested in a new nationwide infrastructure to augment its existing network and facilitate the U.K.'s 5G requirements, supported by its recent partnership with Three UK to deliver core and regional connectivity to enable 5G. With its customers typically using up to 3.5 times more data than the average U.K. customer, Three UK required a high-capacity, high-performance virtual network from SSE Enterprise Telecoms that would further support the bandwidth-hungry needs of 5G as well as upgrade existing 4G connectivity.

sse Enterprise | Telecoms

Customer
SSE Enterprise Telecoms, one of the fastest growing network operators in the UK

Challenge
Deploy a high-capacity, high-performance virtual network for Three UK that would support the bandwidth-hungry needs of 5G as well as upgrade existing 4G connectivity

Solution
Infinera XTM Series

Results
Reliable, dedicated, high-capacity connectivity services providing the high performance, scalability, and flexibility needed for service differentiation in a very competitive market

Utilizing a fully ROADM-based optical layer and a combination of Layer 1 and Layer 2 200 Gb/s transport options, SSE Enterprise Telecoms can take advantage of the disaggregated system architecture of the XTM Series to enable a plug-and-play approach to support the managed service loop architecture.

MEETING THE CHALLENGE OF 5G BANDWIDTH GROWTH

To meet Three UK's requirements, SSE Enterprise Telecoms invested in one of the highest-capacity networks available in the U.K. market, upgrading core and regional networks to support 100 Gb/s connectivity and expanding its existing network footprint to 125 new BT exchanges. These BT exchanges have been "unbundled," meaning that U.K. network operators are able to take advantage of colocation space within the building and can mix their own long distance and access connectivity with standardized local access circuits from Openreach.

SSE Enterprise Telecoms' network needed to support both Layer 1 and Layer 2 services as well as capacities up to 100 Gb/s. Critically, due to the need to support multiple mobile wholesale customers, the network needed to support multiple synchronization domains at the same time as it supported demanding 5G performance criteria in areas such as low latency and synchronization performance. Furthermore, the network was built not only to support Three UK's 4G and 5G ambitions but also to aid the growing wholesale demand for high-capacity 10 Gb/s and 100 Gb/s connectivity services nationwide. SSE Enterprise Telecoms supports over 300 wholesale customers through their quoting and ordering portal, LIVEQUOTE. The ability to provide multiple 10 Gb/s services will make it a market leader in true U.K.-wide 10 Gb/s services.

NETWORK DESIGN BUILT FOR THE FUTURE

SSE Enterprise Telecoms selected a resilient-by-design approach when investing in the network, ensuring it was future proof. Each exchange required 100 Gb/s connectivity to dual data centers to provide redundancy, and the network also needed to connect additional access sites with 10 Gb/s services. This requirement was achieved by creating a managed service loop architecture where pairs of data centers were interconnected by DWDM loops that connected the exchanges and access sites in a chain arrangement. Each data center is required to terminate up to 20 loops.

BENEFITS OF INFINERA XTM SERIES

The XTM Series is a low-power, high-density, and efficient metro packet optical transport platform optimized to power the latest generation of network services, including 5G, DAA, and high-speed business services. It offers unparalleled density and scalability for multi-service metro access and aggregation networks, including integrated Layer 1 and Layer 2 support. Its precision timing and synchronization with low latency far exceed LTE-A and 5G requirements for superior, differentiated performance. It provides a solution with the lowest total cost of ownership thanks to best-in-class low power consumption and efficient traffic management combined with a simple, modular, scalable architecture. It is ideal for mobile wholesale operators thanks to multi-service 4G/5G synchronization domain support within the same chassis.

THE SOLUTION

After a comprehensive industry-wide selection process, SSE Enterprise Telecoms selected Infinera's XTM Series as the underlying DWDM service delivery platform, as well as Infinera's professional services capabilities. Utilizing a fully ROADM-based optical layer and a combination of Layer 1 and Layer 2 200 Gb/s transport options, SSE Enterprise Telecoms can take advantage of the disaggregated system architecture of the XTM Series to enable a plug-and-play approach to support the managed service loop architecture.

The XTM Series provides:

- A range of 200 Gb/s coherent DWDM transport options to match differing site requirements
- 100 Gb/s services via the 400 Gb/s Flexponder, which supports 4 x 100 Gb/s over 2 x 200 Gb/s wavelengths
- 10 Gb/s services via the 200 Gb/s Muxponder, which supports a wide range of lower-speed 10 Gb/s services over a 200 Gb/s wavelength
- The EMXP440, which supports Layer 2 packet optical aggregation with 200 Gb/s wavelengths and 10 Gb/s client ports.

Importantly, the platform and therefore SSE Enterprise Telecoms' network is optimized for 5G synchronization with very low latency asymmetry to support 5G synchronization over Layer 1 services and high-performance 1588v2 and SyncE performance for Layer 2 services. In addition, the switch-on-a-blade approach used in Layer 2 switching within the XTM Series provides distinct synchronization domains per unit. This enables the network to support multiple customers with Layer 2 services and their own unique synchronization domains, a feature that is not possible with solutions that are built around a single centralized Layer 2 switching fabric.

THE RESULTS

SSE Enterprise Telecoms' growing network has successfully enabled the company to rapidly expand its service offering with reliable, dedicated, high-capacity connectivity services providing the high-performance, scalability, and flexibility needed for service differentiation in what is a very competitive market. The future looks promising for SSE Enterprise Telecoms to continue its growth in the U.K. market as 5G and Ethernet continue to grow and develop at a rapid pace.
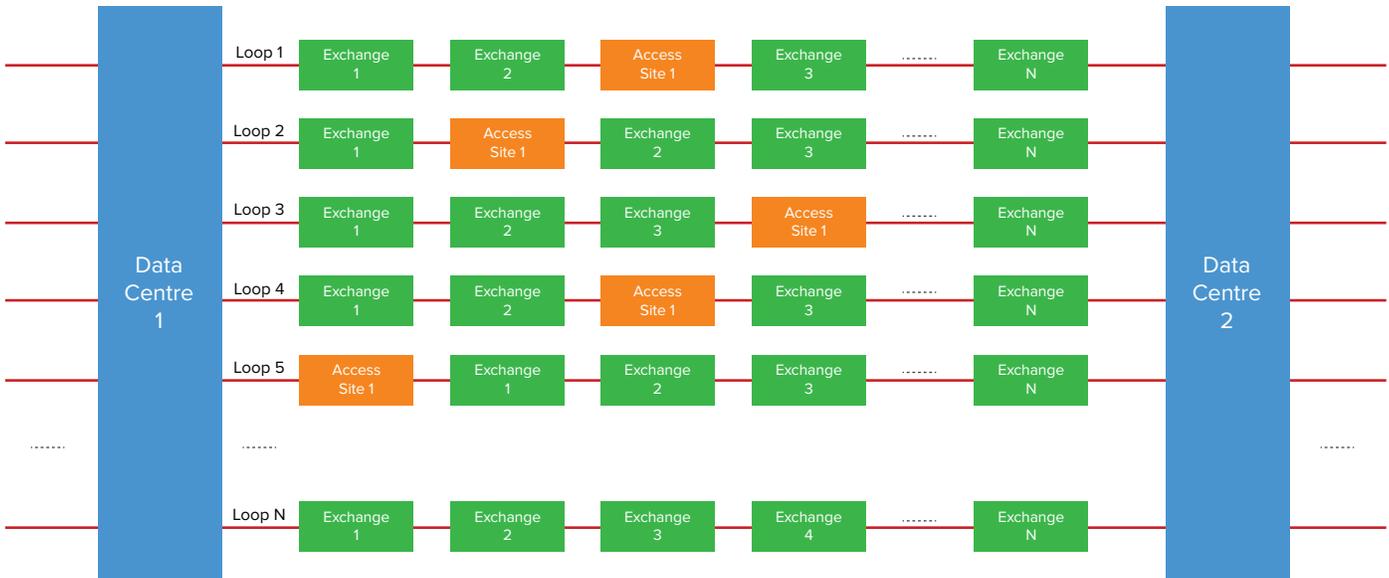
Figure 1: Managed service loop architecture