

Case Study

Single Fiber DWDM Solution

FS 100km Single Fiber DWDM Solution
Empowers ISP Stable 10G/40G
Network

FS helped the customer to build a 10G/40G network over a single fiber for 100km transmission, with BIDI Optical Line Protection System and easy network operation for a stable and reliable network.

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Country

 Jersey

Industry

 Internet Service Provider

Network Type

 Access Networks

Solutions

 Optical Networking

- The DWDM single fiber solution with FMT Series upgrades the network to 40G at a very low cost.
- Unified visual management platform simplifies operations and maintenance, reducing workload and costs.

“FS professional team developed an efficient and stable plan tailored to our needs, and delivered top-notch technical support and services. The plan significantly boosted our network transmission speed, greatly enhancing our business efficiency. We eagerly anticipate future collaborations with FS. Thank you, FS, for your unwavering support and cooperation.”

From Mr. Sabri,
the Chief Technology Officer of the Company

Highlights

- Intelligent optical line protection system quickly switches to backup fibers during failures, ensuring uninterrupted service and highly reliable data transmission.



Key Stats

- 10G/40G data transmission over a single fiber for 100km transmission.
- Build a BIDI Optical Line Protection System with only two optical fibers.
- Increase the efficiency of over 20 engineers to operate and maintain networks across multiple countries and sites.

Overview

The client, a telecom operator in Jersey, established in the 1990s, offers voice and data services to its customers. They also provide solutions for telecom operators in the Channel Islands. With extensive experience in developing and managing private circuits, including Ethernet, SDH, MPLS, leased lines, LAN, IP, managed Internet access, and managed voice, the client's network seamlessly connects to major networks worldwide. This ensures reliable, secure, resilient, and cost-effective connections, earning the trust of operators and enterprises.

With rapid business growth in recent years, the customer's current 10G bandwidth is insufficient to meet their transmission needs. They searched for a reliable and stable expansion solution that could minimize the utilization of fiber resources.

Challenges

The client has upgraded their core network to 100G, but their access and aggregation layers still operate at 10G. As the business grew, things needed to change. However, given that fiber resources were limited and fiber deployment and devices cost a lot, the client sought to achieve expansion with their existing fiber infrastructure.

Additionally, they also emphasized the need for exceptional network stability and reliability, along with the ability to quickly recover data after a network failure. Their technicians should maintain and manage multiple sites across various countries so that easy operations and low costs are necessary. In response to the customer's requirements, FS assembled a technical support and expert team to tailor a customized solution for them.

Solutions

To address the customer's need for capacity expansion with their existing fiber resources and 10G network, FS recommended the FMT Series, with 40G Transceiver modules and MTP to 4 LC breakout harness cables. The FMT Series includes 10G OEO, DWDM EDFA, DCM and more, capable of extending transmission distances up to 100km. With breakout harness cables and 40G SR4 modules, the network could be upgraded to 40G. As 100G or 200G networks might not align with the customer's desire or budget and 10G was still the mainstream in DWDM networks, these components were more cost-effective generally. Moreover, FS provided a single fiber solution to save fiber resources, with the Red/Blue filter of FMT Series to realize single-fiber bidirectional transmission.

For the risk of data interruptions, the client gladly accepted the solution of deploying the BIDI Optical Line Protection System with only two optical fibers. When the main optical fiber fails, it can quickly switch to the backup optical fiber. Network management provides real-time monitoring and management, so service interruptions can be effectively avoided. This solution significantly improves fiber cable utilization, reduces damage caused by natural disasters and humans, ensures link stability, and enables highly reliable data transmission with the quick restoration of damaged lines.

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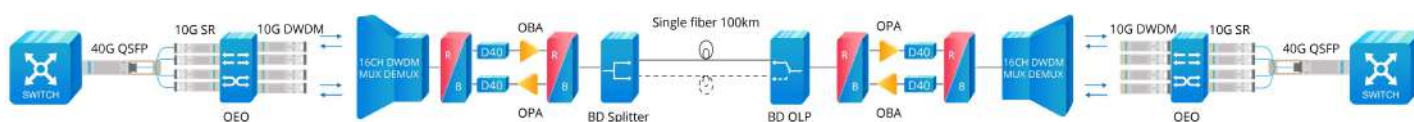
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As more than 20 professional engineers are needed to maintain the network of multiple sites in multiple countries, simple operation and maintenance are very important. The unified visual management of the FMT Series can easily view important data, alarms, and reports through monitoring and online management, either on-site or remotely. This allows for quick responses and the ability to solve network problems efficiently.

Results

The client has built an efficient and stable 40G single-fiber DWDM network in the end. The solution upgrades the network to 40G at the lowest cost, and easy operation of the system reduces the workload of engineers, which effectively supports their business development and competitiveness.



Product List

Product	ID	FS P/N	Description
Transponder	30515	FMT4DL-OEO10GSFP	FMT4DL-OEO10GSFP, 4 Channels WDM Transponder (Converter), 8 SFP/SFP+ Slots
Optical Amplifier	72284	FMT20PA-EDFA	FMT20PA-EDFA, 20dB Gain DWDM EDFA Pre-Amplifier, 13dBm Output
Optical Amplifier	72283	FMT17BA-EDFA	FMT17BA-EDFA, 17dBm Output DWDM EDFA Booster Amplifier, 17dB Gain
Dispersion Compensation	65781	FMT40-DCM	FMT40-DCM, 40KM DCF-based Passive Dispersion Compensation Module
BIDI Splitter	73324	FMT-BDSplitter	FMT-BDSplitter, Optical Splitter
Optical Protection	72700	FMT-BDOLP	Customized BIDI Optical Line Protection Switch (OLP)

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Product	ID	FS P/N	Description
Red/Blue Filter	65981	FSBR-1x2	Customized 1x2 Single Fiber DWDM Splitter Red/Blue C Band Filter
Chassis	70413	FMT-CH	FMT-CH, Customized 4/8/16 Slots 1U/2U/4U Managed Chassis Unloaded Platform
DWDM Mux/Demux	78535	FMU-D162136A	16 Channels DWDM Mux Demux, 100GHz C21-C36, 4.0dB Typical IL, LC/UPC, Single Fiber, Side-A
DWDM Mux/Demux	78536	FMU-D164560B	16 Channels DWDM Mux Demux, 100GHz C45-C60, 4.0dB Typical IL, LC/UPC, Single Fiber, Side-B
MTP® Harnesses	68047	8FMTPLCOM4	1m (3ft) MTP® Harness, MTP®-8 UPC (Female) to 4 LC UPC Duplex, 8 Fibers, Multimode (OM4)
10G DWDM SFP+	69611	DWDM-SFP10G-80	Customized C17-C61 SFP+ 10G DWDM 100GHz 80km Duplex LC/UPC SMF Optical Transceiver Module
10G SFP+ Module	108387	SFP-10GSR-85	Customized SFP+ 10GBASE-SR 850nm 300m Duplex LC MMF DOM Optical Optical Transceiver Module
40G QSFP+ Module	48558	QSFP-SR4-40G	Customized QSFP+ 40GBASE-SR4 850nm 150m DOM MPO-12/UPC MMF Optical Transceiver Module, Support 4 x 10G-SR



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