



FSP 3000 M-Flex800™

Cost-efficient and versatile IP-to-DWDM solution with ZR/ZR+ optics from 100 to 800Gbit/s

Benefits

- **Host for ZR/ZR+ optics**
Simple, cost-efficient 1-slot card providing a powerful IP-to-DWDM solution
- **100 to 800Gbit/s line rate flexibility**
With 100/400/800 ZR(+), OpenROADM and proprietary coherent pluggable optics
- **100 to 800Gbit/s client services flexibility**
For 100 to 800Gbit/s Ethernet and OTN OTU4 and OTUCn client services
- **Multiple operating modes**
Such as single or multiple trans-/muxponder, ZR to ZR gateway between coherent domains, IP/optical demarcation and port aggregation from channelized router ports
- **For any open line system (OLS)**
Compliant with 50/75/100/150GHz fixed grid and 6.25GHz flexgrid frequency grids.
- **Hardened design**
Enabling support for street cabinet configuration requirements

Overview

The FSP 3000 M-Flex800™ is a universal host for ZR/ZR+ coherent interfaces of different rates up to 800Gbit/s. Compared to classical trans-/muxponder solutions, our M-Flex800™ supports very simple aggregation of client services into signals up to 800Gbit/s. This enables a low power and cost-efficient solution all in the compact footprint of a 1-slot card. As a complement to IPoDWDM solutions, our M-Flex800™ provides a more powerful IP-to-DWDM adaption. It gives users the possibility to choose between different ZR/ZR+ signals and line formats, and a seamless, open API integration with optical domain controllers. This integration is key for optimized provisioning and monitoring of relevant optical parameters in accordance with the optical line system.

The M-Flex800™ is designed for all kinds of coherent line speeds like 100, 400 or 800Gbit/s. It uses a variety of coherent pluggable interfaces such as 100ZR(+), 400G ZR(+)/OpenZR+/OpenROADM, 800G ZR(+) and proprietary interfaces that can be transported over any open line system (OLS). This unique flexibility allows users to address a wide range of cost-efficient high-speed applications from the edge to the network's core, and facilitates smooth service upgrades to higher data rates up to 800Gbit/s at any time and with the highest simplicity. Moreover, the plug type and electrical host rate flexibility make it ready to adopt upcoming interface types quickly.

Part of the FSP 3000 open optical transport solution, M-Flex800™ can be slotted in multiple chassis sizes, from 1 to 12RU, 300mm and 600mm depth, with front or rear access, with DC, AC and mixed power supply options. This includes a hardened, ETSI-compliant 1RU chassis, ideal for outdoor deployments like street cabinets. Two M-Flex800™ cards plus management and control interfaces can be equipped in a 1RU, offering 1600Gbit/s total capacity in a 1RU chassis. This compactness and deployment flexibility facilitate the use of M-Flex800™ in both DCI and carrier environments, inside or outside the central office. It also facilitates smooth service additions to existing installations.

The FSP 3000 M-Flex800™ can work in multiple operating modes aligned to the used network ZR pluggables. It is user-configurable as a single or multiple trans- or muxponder, supporting client services and line speeds from 100 up to 800Gbit/s. Moreover, it can also be used as a demarcation device between IP and optical layers, a port combiner for channelized router ports, or a coherent gateway for ZR-ZR metro/core interconnects.

Operational complexity and cost are minimal with our M-Flex800™. Its data rate and port flexibility, and numerous operating modes minimize users' inventory and spare pool. In addition, its simple design and the use of ZR coherent optics minimize power consumption. What's more, the M-Flex800™ offers equipment and path protection options, and a comprehensive suite of monitoring capabilities for highest reliability.

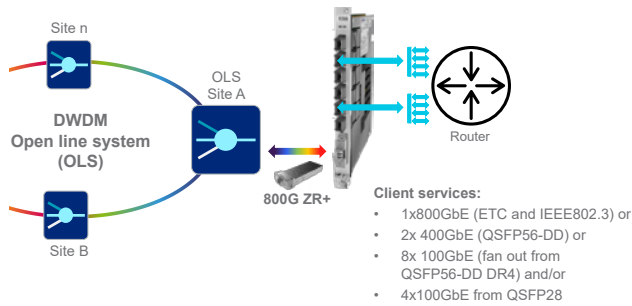
FSP 3000 M-FLEX800™

High-level technical specifications

Parameter	Specifications
Size	1-slot hot-swappable FSP 3000 card
Deployment	<ul style="list-style-type: none">• Can be slotted into multiple FSP 3000 chassis variants, from 1RU to 12RU chassis sizes, ETSI 300mm and 600mm depth options, and AC, DC and mixed AC/DC power supply• ETSI 300mm 1RU chassis with all-front access and extended temperature range suitable for street cabinets
Modes of operation	<ul style="list-style-type: none">• 100Gbit/s single or multiple transponder• 400Gbit/s single or multiple trans-/muxponder• 800Gbit/s trans-/muxponder• Port aggregation and coherent fan-out from channelized router port• ZR gateway between coherent domains
Client/Line ports	6x QSFP28/QSFP56-DD (type 1 and type 2) with smart airflow support and 1x CFP2-DCO
Client services	<ul style="list-style-type: none">• 100/400/800Gbit/s Ethernet (200Gbit/s Ethernet on request)• 100G OTN OTU4 and OTUCn
Line rates	100Gbit/s to 800Gbit/s coherent: 100, 200, 300, 400, 600, 800Gbit/s
Grey pluggable optics	Support for all market typical interface types, such as <ul style="list-style-type: none">• 100G: LR4, CWD4M4, PSM4, SR4, ZR, LR, FR, DR, AOC• 400G: DR4/DR4+ (w/ 4x 100GE fan out), LR4, FR4, SR8, AOC• 800G: 2FR4, DR8 (w/ 8x 100GE fan out), FR8, LR8
Coherent pluggable optics	Wide range of coherent pluggable options: <ul style="list-style-type: none">• 100ZR+ (C- and I-Temp variants)• 400G ZR/ZR+/OpenZR+ and OpenROADM• 800G ZR/ZR+
Wavelength grid	Flexgrid 6.25GHz; 50/75/100/150GHz
Applications	From metro to long haul applications , depending on pluggable type. For example >3000km with QPSK 400G
Management	Open interfaces Support for CLI, REST, NETCONF, SNMP and WebGUI Monitoring via Websockets, SNMP and streaming telemetry End-to-end service and network management with Adtran Ensemble Controller

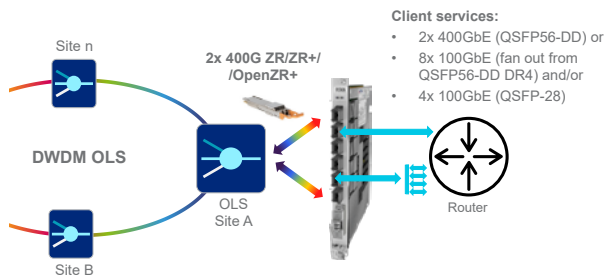
Applications in your network

• 800G transport (800G trans-/muxponder)



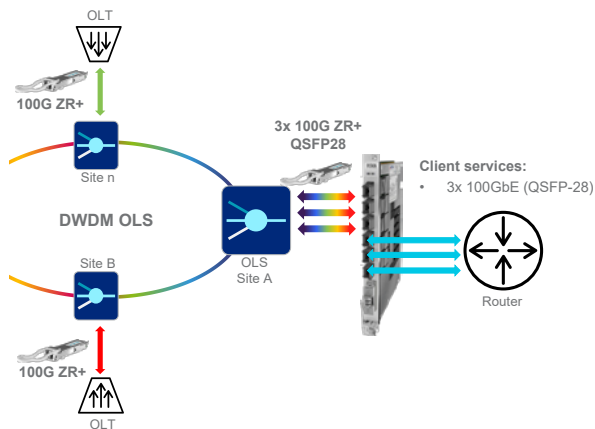
- Extended client support (from 100 to 800Gbit/s data rates)
- Smooth migration to 800G
- 800G CFP2 supporting 800ZR and ZR+ interfaces

• 400G transport (400G dual trans-/muxponder)



- Variety of ZR/ZR+ pluggable optics enabling cost-efficient short to long haul applications
- Smooth migration from 100 to 400Gbit/s data rates
- Single or dual 400G trans/muxponder configuration options

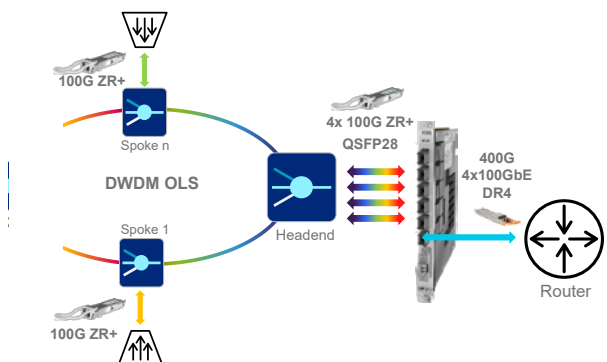
• 100G transport (100G triple transponder)



- Triple transponder in a 1-slot card
- Suitable for deployment in street cabinets with 100ZR QSFP28 I-temp variant and 1RU hardened chassis with all front access and two traffic slots (1600Gbit/s per 1RU chassis)
- Can interface with 100ZR+ coherent optics plugged into end-application devices (e.g., OLT)

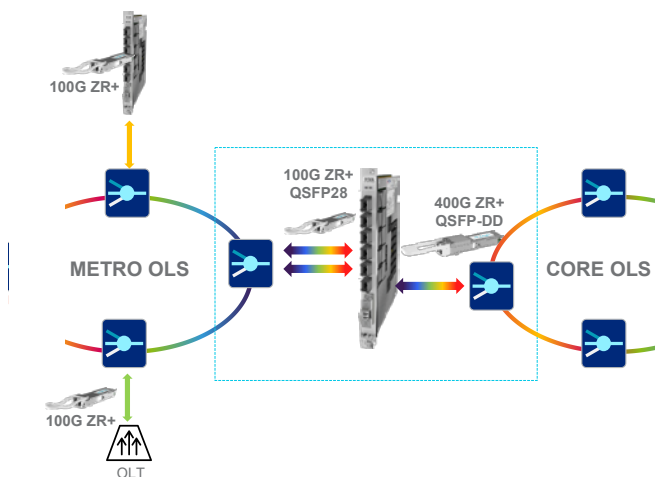
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• Port aggregation and coherent fan-out from channelized router port



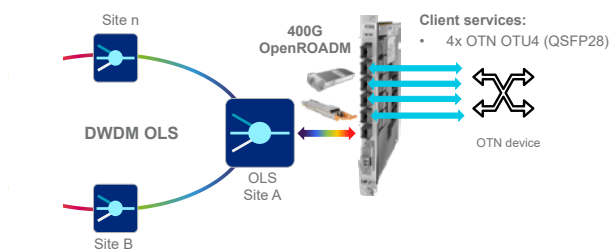
- Efficient use of 400G pluggable ports on routers and switches
- 4x 100ZR+ fan out mode from headend (hub) channelized router ports to spoke nodes
- Auto-tuning option: Spoke wavelength configuration from headend unit

• Coherent speed gateway (ZR to ZR metro/core interconnect)



- ZR to ZR metro/core interconnects without back-to-back line cards and avoiding grey optics
- For turnkey and disaggregated networks

• OTN switched network



- OTN interoperability with third-party interconnect
- 400G switching capacity per card

Updated April 10, 2025

