

## FSP 150-XG440

### 100G multi-technology demarcation and edge aggregation

Today's bandwidth demands are constantly increasing, and this bandwidth growth penetrates down to the network edge. Operators and enterprises need demarcation and aggregation devices that can accommodate Carrier Ethernet 2.0 (CE2.0) 10Gbit/s and 100Gbit/s service offerings with cost-effective capacity, scalability and resilience and with the lowest space and power consumption.

Our FSP 150-XG440 is a 100GbE service demarcation and edge platform that provides high-capacity aggregation for flexible delivery of advanced end-to-end SLA-based CE 2.0, IP and MPLS services. Its outstanding flexibility, capacity, and hierarchical QoS capability make it ideal for high bandwidth aggregation applications such as DSL/CMTS/FTTX residential networks, mobile backhaul, and mega POPs. The FSP 150-XG440 connects major business sites with private and public clouds, managing highest data traffic of cloud-centric IT networks. It also provides high-capacity enterprise connectivity services to multi-tenant locations where space and power are at a premium.



### Your benefits

✔ **High-capacity business services**

Meeting bandwidth demand of cloud-centric networks with EVPL and VPLS L2 VPN connectivity

✔ **Multi-layer, multi-protocol services**

For applications with any MEF CE 2.0, IP and MPLS network technology featuring comprehensive OAM capabilities

✔ **Industry leading design**

Achieving high capacity edge demarcation and aggregation with smallest footprint and lowest power consumption

✔ **Automated provisioning**

Standardized, open interfaces for central control and resource abstraction in line with MEF LSO architecture

✔ **Highly resilient architecture**

Protecting services against network or device failures as well as fiber breaks with multiple resilience mechanisms

✔ **Comprehensive feature set**

Hierarchical QoS and multi-layer OAM for a wide range of applications

## High-level specifications

### Switching capacity

- 400Gbit/s switching capacity
- One line card per chassis
- Line card variants:
  - 40x 10GbE
  - 20x 10GbE plus 2x 100GbE

### Ethernet, IP and MPLS

- Ethernet: highly scalable and resilient layer
- IP: IS-IS and OSPF routing
- MPLS: RSVP and BGP signaling and BFD for OAM

### Advanced Ethernet OAM

- Continuity check messages
- Delay and fault measurement, loopback testing
- Link Trace for fault analysis
- Automated service activation and testing with Y.1564 and RFC-2544 Tests

### Advanced service capabilities

- H-QoS with advanced policing and scheduling mechanisms
- Open control with NETCONF/YANG

### Performance monitoring

- IEEE 802.3ah/ITU-T G.8021 PHY level monitoring
- Y.1731 frame loss measurement
- Multi-CoS monitoring on EVCs

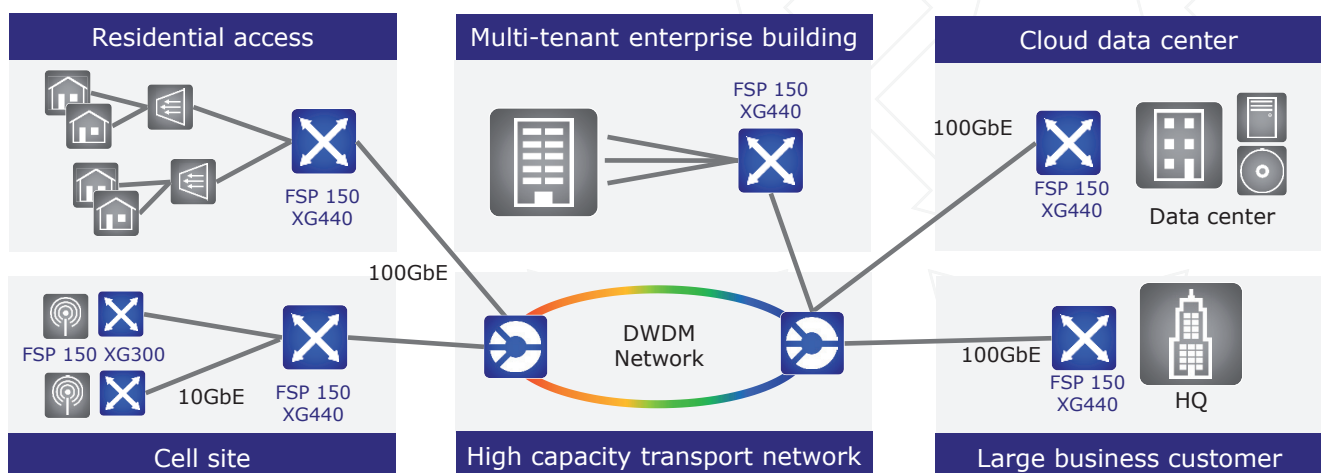
### Environmental specifications

- 2RU chassis with one traffic slot
- Operating temp.: 0°C to 50°C
- Storage temp.: -40°C to 70°C
- Power supply variants:
  - AC 1200W
  - AC 1050W
  - DC 1200W

## Applications in your network

### Multi-layer, multi-protocol MEF CE 2.0 certified 100G metro service edge solution

- Pre-aggregator for connection of DSLAMs to metro network supporting Ethernet and MPLS multicast features such as IGMP
- Highly resilient, SLA-based 100GbE Carrier Ethernet bandwidth services for demanding applications
- Creating bandwidth headroom in mobile backhaul networks for the introduction of high-bandwidth 5G technology
- High capacity business and enterprise services to multi-tenant locations where flexibility, space, and power are at a premium



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**Switching capacity and line cards**

- 400Gbit/s switching capacity
- One line card per chassis
- Line card variants:
  - CE-4010G-A: 40x 10Gbit/s SFP+ data ports
  - CE-2010-2100G-A: 20x 10Gbit/s SFP+ ports plus 2x 100Gbit/s CFP ports

**Services**

- E-LAN services
- E-LINE services

**Layer 1**

- SFP Digital Diagnostics
- Jumbo frames per port – up to 16,000 bytes long
- Port mirroring

**Layer 2 bridging**

- Layer 2 transparent bridging
- Layer 2 MAC learning and switching by hardware
- Layer 2 aging
- Up to 60,000 MAC addresses per bridge domain
- Learning table limit per bridge domain
- Up to 200,000 MAC addresses per device
- Link aggregation
- Hash function according to type of packet for link aggregation: L2 header, L3 header, MPLS header
- Link aggregation control protocol (LACP)
- VLAN tag manipulation
- VLAN ranges
- All-to-one bundling
- G.8032 / Y.1344 ITU-T Ethernet ring protection switching (ERPS V2)
- Ethernet in the first mile (EFM)
- L2 control protocols (drop, forwarding or Cisco tunneling)
- L2 service loopback
- Jumbo frame support
- Port link reflection

**Routing**

- Wire-speed L3 forwarding
- Static routes
- OSPFv2
- IS-IS

**MPLS**

- RSVP-TE + path protection, FRR detour protection, FRR facility protection
- LDP
- Layer 2 VPNs, E-LAN

**OAM**

- BFD (for OSPF, ISIS, LDP, RSVP)
- PING and traceroute
- MPLS LSP PING and traceroute
- MPLS PW VCCV PING

**Ethernet OAM**

- Continuity Check Messages (CCMs)
- Delay Measurement Tests
- Loopback Tests
- Lost Measurement Tests
- Link Trace
- Y.1564 Tests
- RFC-2544 Tests

**Management features**

- Out-of-band management
- Inband management
- Management VLAN
- Command line interface (CLI) – through Serial, TELNET, or SSH connection (Protocol versions 1 & 2)
- SNMP versions 1, 2, and 3
- NETCONF
- TACACS+ authentication, authorization and accounting
- RADIUS authentication and accounting
- Upload/download of configuration files using SCP server
- Copy-paste of configuration
- Time of day + time zone
- Internal syslog + remote syslog
- DHCP client

**HQoS**

- Egress shaping per port / AC
- Ingress policer per port / AC
- Strict Priority (SP) and weighted Round Robin scheduling mechanisms
- Statistics per port
- Statistics per AC interface
- Congestion-avoidance mechanism WRED

**Environmental**

- Dimensions (W x H x D): 482mm x 88.1mm x 497.82mm / 19in x 2RU x 19.6 in
- Weight: 18kg (40lb) fully loaded
- Operating temperature: 0°C to 50°C / 32°F to 122°F
- Storage temperature: -40°C to +70°C / -40°F to 158°F
- Humidity: 20 to 85%, non-condensing
- Testing standard: ETSI EN300-019, Class 3.1

**Power supply units and power consumption**

- AC 1200W
  - Input
  - 100-120 VAC/60 Hz or 200-240 VAC/50 Hz
  - Maximum current 15A @ 90V
  - Output
  - 240 VAC: 12 VDC, 100 A, 1200W
  - 100 VAC: 81.6 A, 1000W
- AC 1050W
  - Input
  - 100-120 VAC/60 Hz or 200-240 VAC/50 Hz
  - Maximum current 14.5A @ 90V
  - Output
  - 240 VAC: 12 VDC, 87 A, 1044W
  - 100 VAC: 12 VDC, 87 A, 1044W
- DC 1200W
  - Input: -40 to -72 VDC, 1500 W
  - Output: 12 VDC, 100 A, 1200 W
- Power consumption: 330W (1126 Btu per hour)

**Compliance**

- FCC Part 15 (class A); EMC Directive (class A emission, immunity); LVD Directive: electrical safety; CE; TUV-R (USA, Canada); C-Tick (Australia); ICES-003 (Canada); GOST; RoHS Directive; REACH SVHC; WEEE Directive; NEBS certified
- Class I laser products, Internal lasers comply with IEC 60 825-1:1993 + A1: 1997 + A2:2001/EN60825-1:1994 + A1:1996 + A2:2001 CE2.0 Certified.
- EMC Directive 2004/108/EC (Class A) and Low Voltage Directive 2006/95/EC

**Certification**

- MEF CE 2.0 certified
- ISO 9001:2008 Certified
- ISO 14001 Certified