FSP 150CC-XG210

10Gbit Carrier Ethernet service demarcation and aggregation

Benefits

- **High-speed Carrier Ethernet 2.0 applications**
  Optimized for high-speed CE2.0 applications supporting up to 40Gbit/s full-duplex capacity

- **MEF CE2.0 certified UNI/NNI**
  With hierarchical traffic management scaling up to 512 Ethernet virtual connections simultaneously

- **ConnectGuard™ Ethernet technology**
  Carrier Ethernet networks can be secured and encrypted without any loss of speed and performance

- **Unique timing flexibility**
  Simultaneous support of Synchronous Ethernet and IEEE 1588v2 across packet backhaul networks

- **Advanced demarcation technology**
  Enabling stringent service level agreements and integration with a wide range of back-office tools

- **Ensemble management**
  Fast service roll out and tracking of big amounts of services

Overview

Constantly increasing backhaul bandwidth requirements are exhausting the capacity of connectivity networks. Service providers need edge and aggregation devices that enable a seamless transition from 1Gbit/s to 10Gbit/s services, while also addressing stringent customer demands for secure and assured connectivity.

Our FSP 150CC-XG210 provides a high-capacity 10 Gigabit Carrier Ethernet (GbE) aggregation solution enabling cost- effective delivery of CE 2.0 services and highly accurate synchronization over fiber-based access networks. The non-blocking design supports traffic aggregation for up to sixteen GbE ports and/or two 10GbE ports provided on hot-swappable access interface modules. Designed for flexibility and scalability, our FSP 150CC-XG210 can be deployed in point-to-point, hub-and-spoke and resilient access ring topologies. With its multitude of carrier-class protection and resiliency options, the FSP 150CC-XG210 supports the delivery of differentiated and highly reliable Carrier Ethernet 2.0 services across all access network topologies. What's more our FSP 150CC-XG210 meets stringent privacy and confidentiality requirements by encrypting traffic already at the network edge with our innovative ConnectGuard™ Ethernet technology.

FSP 150CC-XG210

High-level technical specifications

Interfaces
- Hot-swappable access interfaces (two slots):
  - 1x 10GbE XFP or SFP+ module
  - 8x 1GbE SFP or RJ45 module
- Network interface:
  - 2x 10GbE XFP ports with redundancy

Service Assurance
- Compliant with the latest OAM standards such as 802.3ah, 802.1ag, Y.1731 and Y.1564
- Synthetic frame loss and delay measurement for multi-point service monitoring
- SLA verification can be performed on a per-service basis

ConnectGuard™ security
- L2 MACsec encryption at line rate on a per-EVC basis
- Robust AES encryption algorithm
- IEEE 802.1X based key distribut
- Diffie-Hellmann key exchange process
- Tamper resistant

Synchronization
- ITU-T G.8261 / G.8262 / G.8264 SyncE on all interfaces
- Sync Status Message support
- IEEE 1588v2 G.8265.1, G.8275.1 PTP profiles and G.8273.2 BC
- Internal Stratum-3E clock with holdover

VLAN support
- 4096 VLANs and stacked VLANs, 512 EVCs
- 2-tag mgmt. for c- and s-tag
- IEEE 802.1ad provider bridging
- Ethertype translation
- Jumbo frames support up to 9612 bytes

Environmental
- 1RU chassis, ETSI compliant
- Modular AC-PSU or DC-PSU
- Operating temp.: –40 to +65ºC (hardened environment)
- Maximum power consumption: 100W

Applications in your network

Differentiated and highly reliable Carrier Ethernet services
- Intelligent Carrier Ethernet 2.0 service demarcation points compliant with the latest OAM standards
- Differentiation through service security in addition to end-to-end service level agreements and bandwidth on demand.
- Transformation of traditional leased lines into secure and encrypted connectivity
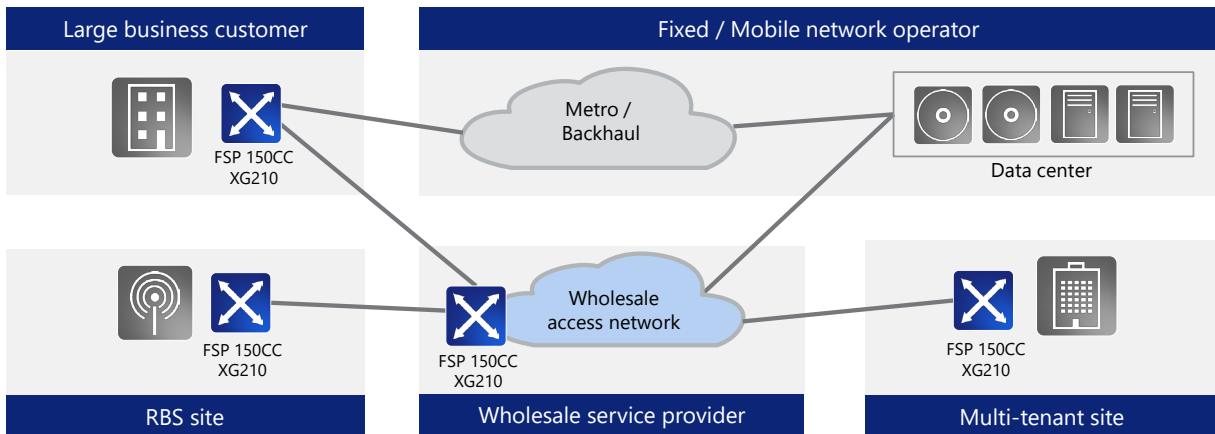
Product specifications

Access capacity

- Two slots for access interface modules with hot swap support
- 1 x 10GbE XFP module
- 1 x 10GbE SFP+ module
- 8 x 1GbE (SFP) module
- 8 x 1GbE (SFP) module with MACsec capability
- 8 x 1GbE (RJ45) module

Network interface

- Two 10GbE (XFP) ports

Network Interface redundancy

- IEEE 802.3ad Link Aggregation – active/standby mode with optional load balancing
- ITU-T G.8032 Ethernet Ring Protection Switching

Synchronization (optional)

- ITU-T G.8261 / G.8262 / G.8264 Synchronous Ethernet on all interfaces
- Sync Status Message support
- IEEE 1588v2 Precision Time Protocol (G.8265.1 and G.8275.1 PTP Telecom Profiles, G.8273.2 Telecom Boundary Clock)
- BITS-in and BITS-out
- BITS Sync Status Messaging
- Input/output selectable ports for Time of Day, 10MHz clock and Pulse-Per-Second signals (1PPS)
- Internal Stratum-3E clock with holdover

VLAN support

- 4096 VLANs (IEEE 802.1Q customer-tagged) and stacked VLANs (Q-in-Q service provider tagged)
- 2-tag management (push / pop / swap) for c-tag and s-tag
- IEEE 802.1ad Provider Bridging (c-tag, s-tag)
- Ethertype translation
- 512 Ethernet Virtual Circuits (EVC)
- 9612 byte per frame MTU transparency

Traffic management

- Acceptable client frame policy: tagged or untagged
- Service classification based on 802.1p, 802.1Q and IP-TOS /DSCP
- MEF-compliant policing (CIR / CBS / EIR /EBS) with three-color marking and eight classes of service
- Hierarchical queuing and shaping
- Rate shaping on transmit for both client and network ports
- Broadcast / multicast rate limiting

Ethernet OAM

- IEEE 802.3ah EFM-OAM Link management
- IEEE 802.1ag connectivity fault management (CFM) with hardware assistance
- ITU-T Y.1731 performance monitoring
- ITU-T Y.1564 service activation testing with MEF-compliant SAT PDUs
- Terminal and facility loopbacks on port- and EVC-level for all interfaces
- Embedded RFC 2544 test generator and analyzer (ECPA)
- MEF-compliant Layer 2 control protocol disposition and extensive filter options for Layer 2 packet types
- Link loss forwarding to signal local link and network path failures
- Dying gasp message for power failure alarming (EFM-OAM and SNMP trap option)
- Environmental alarm inputs (dry contacts)

ConnectGuard™ security[1]

- L2 MACsec encryption at line rate on a per-EVC basis
- End-to-end encryption mode with one or two VLAN tags transmitted in the clear
- Robust AES encryption algorithm
- Key distribution based on IEEE 802.1X
- Diffie-Hellmann key exchange process
- Tamper resistant and evident enclosure
- Full interoperability with all FSP 150 ConnectGuard™-enabled products

[1] FSP 150CC-XG210(C)

FSP 150CC-XG210

Low-touch provisioning

- DHCP / BOOTP auto-configuration
- IEEE 802.1x port authentication
- Text-based configuration files
- TFTP / SCP for software image upgrade and configuration file copy

Performance monitoring

- RFC 2819 RMON Etherstats on a per-port and per-service basis
- 15-minute and 1-day performance data bins
- IEEE 802.3ah / ITU-T G.8021 PHY level monitoring
- ITU-T Y.1731 single- and dual-ended frame loss measurement
- Synthetic frame loss and delay measurement for multi-point service monitoring
- Multi-CoS monitoring on EVCs scaling up to 4096 simultaneous flows
- Threshold-setting and threshold-crossing alerts
- Physical parameter monitoring for XFP / SFP+ optics, including TCAs
- Temperature monitoring and thermal alarms
- MEF-35/36 SOAM PM collection

Management and security

Local management

- Serial connector (RJ45) using CLI
- Local LAN port (RJ45) using CLI, SNMP and Web GUI interfaces

Remote management

- Maintains in-band VLAN and MAC-based management tunnels

Management protocols

- IPv4 and IPv6 DCN protocol stacks, including dual-stack operation and 6-over-4 tunnels
- Telnet, SSH (v1 / v2), HTTP / HTTPS, SNMP (v1 / v2c / v3)

Secure administration

- Configuration database backup and restore
- System software download via FTP, HTTPS, SFTP or SCP (dual flash banks)
- Remote authentication via RADIUS / TACACS
- SNMPv3 with authentication and encryption
- Access control list (ACL)

IP routing

- DHCP, RIPv2, OSPF and static routes, ARP cache access control

System logging

- Alarm log, audit log and security log

Regulatory and standards compliance

- MEF CE 2.0 certified
- IEEE 802.1Q (VLAN), 802.1p (Priority), 802.1ag (CFM), 802.3ah (EFM), 802.1x
- ITU-T Y.1731, G.8010/Y.1306, G.8011.1+2, G.8012, G.8031 (APS)
- MEF-6.1, 9, 10, 11, 14, 20, 21, 22.1, 23.1, 25, 26.1, 30, 33, 35
- IETF RFC 2544 (frame tests), RFC 2863 (IF-MIB), RFC 2865 (RADIUS), RFC 2819 (RMON)
- MEF-compliant ITU-T Y.1564 service activation testing
- ANSI C84.1-1989
- ETSI 300 132-2, BTNR2511, ETS 300-019, ETS 300-019-2-[1,2,3], ETS 300-753
- NEBS Level 3 certified
- Telcordia GR-499, GR-63-CORE, SR-332
- Safety IEC / UL / EN 60950, 21CFR1040.10, EN 60825, EN 50371, EN 300-386, EN 50160, IEC 60320/C14
- EMI EN 300-386, GR-1089-CORE, ETS 300-132, FCC Part 15, Class A, Industry Canada

Environmental

- Dimensions: 1U compact chassis, 439mm x 43mm x 269mm / 17.3" x 1.75" x 10.6" (W x H x D), ETSI-compliant
- Operating temperature: -40 to +65ºC (hardened environment)
- Storage temperature: -40 to +70ºC (GR-63-CORE)
- Humidity: 5 to 95%, B1 (non-condensing)
- Modular AC-PSU: 90 to 264VAC (47 to 63Hz) with over-voltage and over-current protection
- Modular DC-PSU: -36 to -72VDC or +18 to +30VDC with over-voltage and over-current protection
- Maximum power consumption: 100W

Adtran

TL9000
TL19.1270

ADTRAN Certified Supplier
ISO 9001
ISO 14001
TL 9000