

Product Overview

Our FSP 150-GE110Pro Series is a multi-layer service demarcation solution designed for intelligent and assured delivery of SLA-based services in business, wholesale and mobile backhaul applications. The series of compact first-mile demarcation devices enables network operators and managed service providers to deliver a full range of Carrier Ethernet 2.0 and IP connectivity services. Our FSP 150-GE110Pro is available in several variants to meet agility, performance, security and cost needs for a wide range of applications. Its temperature-hardened design ensures highest service availability, even in harsh environments.

Versatile Applicability

Service providers are turning to Network Functions Virtualization (NFV) to speed up service delivery, simplify network operations and reduce costs. Virtualized Customer Premises Equipment (vCPE) deployment is considered to be one of the most common NFV applications in large-scale access networks. To effectively support this evolution, our FSP 150-GE110Pro Series enables network operators to offer true multi-service access by combining the demarcation of Carrier Ethernet 2.0 and IP services in a single device which is far simpler to deploy and maintain than a traditional Cell Site Gateway (CSG) or Customer Edge (CE) router. With SDN-controlled IP forwarding and the extensive set of standards-based auto-configuration capabilities built into the FSP 150-GE110Pro Series, unskilled craft personnel can install and turn up value-added services, including IP VPN and Internet Access, fast without onsite provisioning.

ADVA ConnectGuard™ Security

Our FSP 150-GE110Pro Series meets stringent privacy and confidentiality requirements by encrypting traffic already at the network edge. ADVA ConnectGuard™ Ethernet technology gives service providers plenty of opportunity for differentiation through service security in addition to end-to-end service level agreements and bandwidth on demand. It supports the increased security requirements imposed on access networks by NFV and meets the privacy requirements of open protocol, NFV-centric networks. For enterprises and government institutions, ADVA ConnectGuard™ Ethernet enables the transformation of traditional leased lines into secure and encrypted connectivity.

End-to-End Etherjack™ Service Assurance

Our FSP 150-GE110Pro Series is designed for highest service availability. It expands our Etherjack™ demarcation



technology to provide an intelligent IP service demarcation point at customer premises and cell site locations. Etherjack™ service demarcation is compliant with the latest OAM standards and also features synthetic frame loss and delay measurement for multi-point service monitoring. SLA verification functions are implemented in hardware and can be performed on a per-service basis to ensure low latency, minimal jitter and strong packet delivery performance for mission critical applications.

Syncjack™ Timing Excellence

Including comprehensive Syncjack™ technology for timing distribution, monitoring and timing service assurance, the FSP 150-GE110Pro Series opens new revenue opportunities from the delivery of SLA-based synchronization services. Offering unique flexibility, the series supports Synchronous Ethernet and IEEE 1588v2 Precision Time Protocol (PTP), which conforms to the ITU-T Telecom Profiles for distribution of synchronization information over packet networks.

Features & Benefits

- Ideal for large-scale business services, wholesale and mobile backhaul deployment
- Flexible creation of MEF-certifiable Carrier Ethernet 2.0 services
- Physical demarcation of vCPE services with SDN-controlled IP forwarding
- Advanced Carrier Ethernet 2.0 and IP OAM tools for service assurance
- Hardware-based cryptographic methods for delivery of secure high-performance services
- Low-latency forwarding and high measurement resolution for assured real-time services
- Comprehensive Syncjack™ technology for synchronization delivery and assurance

Technical Information

Access Capacity

- Two¹ ports:
 - one dedicated 100/1000BaseX (SFP) port
 - one 10/100/1000BaseT or 100/1000BaseX (SFP) port
- Two^{2/4}/Four³⁻⁷ 10/100/1000BaseT or 100/1000BaseX (SFP) ports

Network Interface

- Two¹ 100/1000BaseX (SFP) ports
- Two²⁻⁷ 10/100/1000BaseT or 100/1000BaseX (SFP) ports
- One network port can be defined as an additional access port

Network Interface Redundancy

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

Synchronization^{6,7}

- ITU-T G.8261/G.8262/G.8264 Synchronous Ethernet on all interfaces
- Sync Status Message support
- IEEE 1588v2 Precision Time Protocol
- ITU-T G.8265.1 and G.8275.1 PTP Telecom Profile
- BITS-in and BITS-out
- BITS Sync Status Messaging
- 1 PPS in/out
- 10 MHz

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
- 32^{1,2}/64³⁻⁷ Ethernet Virtual Circuits (EVC)
- 9612 Byte per frame MTU transparency
- EoMPLS encapsulation

Layer 2 Traffic Management

- Acceptable client frame policy: tagged or untagged
- Service classification based on IEEE 802.1p, 802.1Q and IP-TOS/DSCP
- VLAN tag priority mapping (IEEE 802.1ad PCP encoding)
- MEF-compliant policing (CIR/CBS/EIR/EBS) with three-color marking and eight classes of service
- Port shaping on transmit for both client and network ports
- MEF 10.3 Hierarchical Policing
- DiffServ supporting WFQ/SP mix

Layer 3 Traffic Management

- L2-L4 Access Control Lists (ACL) for classification
- VRF-lite virtual routing and forwarding
- DHCP Relay Agent

Operation, Administration and Maintenance (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
- Terminal and facility loopbacks on port- and EVC-level for all interfaces
- Cable diagnostics with benchmarks (electrical interfaces only)
- 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)
- Port mirroring (local and remote)

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
- TWAMP sender/reflectors for L3 based service assurance
- Multi-CoS monitoring on EVCs scaling up to 64¹/128²⁻⁶ simultaneous SOAM flows
- Threshold-setting and threshold-crossing alerts
- Physical parameter monitoring for SFP optics, including TCAs
- Temperature monitoring and thermal alarms

ConnectGuard™ Security

- 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

Low-Touch Provisioning

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

Management and Security

Local Management

- Serial connector (RJ45) using CLI
- Local LAN port (RJ45) using CLI, SNMP and Web GUI interfaces
- 3G/LTE/WiFi USB interface

Remote Management

- Maintains in-band VLAN and MAC-based management tunnels
- Fully interoperable with FSP 150CM, FSP 150EG-X and other FSP 150 products

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)
- NETCONF/YANG, OpenFlow

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
- IPsec on management traffic
- Access Control List (ACL)

IP Routing

- DHCP, RIPv2 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.8032
- MEF-6.1, -9, -10.2, -11, -14, -20, -21, -22.1, -23.1, -25, -26.1, -30, -33, -35, -36
- IETF RFC 2544 (Frame Tests), RFC 2863 (IF-MIB), RFC 2865 (RADIUS), RFC 2819 (RMON), RFC 5357 (TWAMP)
- 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: 137mm x 34mm x 152mm/5.4" x 1.3" x 6.0"¹;
- 1U compact chassis, 220mm x 44mm x 212mm/8.7" x 1.75" x 8.4"²⁻⁴; 439mm x 44mm x 212mm/17.3" x 1.75" x 8.4" (W x H x D)⁵⁻⁷, ETSI-compliant
- Operating temperature: -40 to +65°C (hardened environment)
- Storage temperature: -40 to +70°C (GR-63-CORE)
- Humidity: 5 to 95%, B1 (non-condensing)
- Integrated PSU²⁻⁴/Redundant Modular PSU⁵⁻⁷: 110/240 VAC, -48 to -72VDC or +24 to +30VDC with over-voltage and over-current protection/External 110/240 VAC, -48 to -72VDC power adapter¹
- Maximum power consumption: 20 Watts
- Dry alarm contacts⁵



Connect
Guard™



For more information please contact an ADVA Optical Networking consultant or visit us at www.advaoptical.com

Data Sheet, version 07/2015

ADVA™
Optical Networking