FSP 150-XG118Pro (CSH)

10G secure network acccess with hardware-encryption and edge compute

Benefits

- **Robust protection of the network**
  Hardware-based end-to-end encryption protects individual connections or entire Ethernet traffic

- **Cryptographic module**
  Compact, integrated security module creates crypto-agility, protects key exchange and prevents unauthorized access to sensitive data

- **Approval for classified data**
  German Federal Office for Information Security (BSI) has approved transport of classified data up to "VS-NfD" (Germany), respectively "EU/NATO Restricted"

- **Precise synchronization**
  Hardware-based synchronization enables precise timing with optional authentication and integrity protection for the PTP protocol[F]

- **Secure edge computing**
  Optional tamper-resistant server enables protected hosting of virtualized network functions

- **Automated operation**
  Simple configuration and administration using a powerful management system and standardized interfaces

Overview

Demand for bandwidth in networks is increasing, and at the same time customers require a high level of protection for their sensitive data. Access networks are therefore subject to continuous change and must be flexibly expanded from 1Gbit/s to 10Gbit/s services. With low-latency end-to-end encryption, the high security requirements of critical infrastructures and public authorities can be met even over existing, non-trusted networks.

ADVA Network Security is here to help with our new FSP 150-XG118Pro (CSH), the latest member of our successful FSP 150 family. It adds hardware-based encryption and a strong security framework to demarcation and aggregation of 1Gbit/s and 10Gbit/s MEF 3.0 Carrier Ethernet and IP services. The FSP 150-XG118Pro (CSH) has a dedicated hardware cryptographic module to provide strongly security services to the encryption engine and secure storage of critical security parameters. It also provides physical security with tamper detection and reaction. The FSP 150-XG118Pro (CSH) includes a rich set of operational features and synchronization, and it supports a pluggable server module for in-service upgrade into a uCPE device. What`s more, this device is approved by the German Federal Office for Information Security (BSI) for the transmission of classified data up to German "VS-NfD" and "EU/NATO Restricted" accordingly (BSI-VSA-10433).

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High-level technical specifications

Security
- Cryptographic security module
- Tamper-resistant design
- Secure boot, secure update
- True random number generator
- AES encryption in FPGA
- BSI approval for transmission of classified data up to NATO/EU-Restricted and VS-NfD

Traffic ports
- Eight 1/10GbE (SFP/SFP+) ports with Layer 2 encryption (MACSec) capability
- Two internal 10GbE ports to server slot
- 82 Gbit/s capacity

Traffic protection
- IEEE 802.1AX link aggregation – active/standby or load balancing
- ITU-T G.8032 Ethernet rings
- ITU-T G.8031 Ethernet linear protection switching

Ethernet services
- Hierachical-COS shaping
- Port shaping
- Jumbo frames and elephant flows
- L2-L4 access control lists
- EoMPLS encapsulation

Management
- Comprehensive and powerful management suite
- MEF-compliant SOAM and OAM
- Secure management access featuring RADIUS/ TACACS+

Environmental
- 1RU chassis, ETSI-compliant
- Operating temp.: -40 to +65ºC (hardened environment)
- Redundant modular hot-swappable power supply with AC and DC options

Applications in your network

Connect Guard™

Wide area network

FSP 150-XG118Pro (CSH)
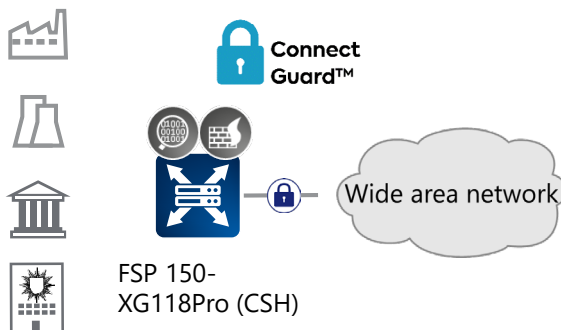
- End-to-end encryption of Ethernet connections
- Hosting of virtualized network functions
- Monitoring of network health and traffic segmentation (VLAN)
- Protection mechanisms
- SyncE and PTP synchronization

- High-security 10Gbit/s access services using Ethernet and IP connections
- End-to-end encryption of Ethernet VLAN links or entire Ethernet interfaces
- Crypto agility enables transition to new quantum-safe key exchange algorithms
- Hosting of virtualized network functions (VNF) such as firewall and intrusion detection on server plug-in card
- Hardware-based synchronization for precise and reliable timing with optional PTP protocol authentication and integrity protection
- Rapid provisioning of connections through centralized SDN control in conjunction with the proven and highly reliable network management solution

Product specifications

FSP 150-XG118Pro (CSH) overview

Traffic ports	Traffic plane	Operating temperature	Power supply	Size	Power consumption
8 x 1/10GbE, 2 x 10GbE to server	82Gbit/s	-40°C to +65°C	Modular Dual AC or DC	1RU (H) 445mm (W)	85W typical (without server)

XG118Pro (SH) Server Card	Processor	Cores	DDR4	SSD	Temperature Range
F150/VME/SRV/X8/32	Intel D-1539	8	32GB	256 – 512GB	I-Temp
F150/VME/SRV/X12/32	Intel D-1559	12	32GB	256 – 512GB	I-Temp
F150/VME/SRV/X16/64	Intel D-1577	16	64GB	256GB – 1TB	C-Temp

Traffic ports

- Eight 1/10GbE (SFP/SFP+) ports with MACsec capability
- Two internal 10GbE ports to server slot
- Flexible allocation of bandwidth to traffic and server ports
- 82 Gbit/s traffic capacity

Hardware-based encryption engine

- AES encryption implemented in FPGA
- 80 Gbps line rate encryption
- MACsec transformation with VLAN bypass
- GCM-AES-128/256 cipher suites
- Extended packet numbering
- Integrity and confidentiality protection
- Configurable replay protection
- Up to 128 secure flows
- IPsec ready

Crypto module and physical security

- Built-in hardware cryptographic module
- Hardware trust anchor and secure boot
- True random number generator and deterministic random bit generator
- Authenticated key exchange
- Secure storage of critical security parameters with power backup for up to 72 hours
- Hardware-ready for IPsec and post-quantum cryptography such as McEliece

Traffic protection

- IEEE 802.1AX link aggregation – active/standby or load balancing
- ITU-T G.8032 Ethernet ring protection
- ITU-T G.8031 Ethernet linear protection switching[F]

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
- Point-to-point, multipoint and rooted-multipoint Ethernet virtual circuits (EVC)
- 9612 byte-per-frame MTU transparency
- EoMPLS encapsulation

Server capability

- Fully open architecture supporting various virtualization platforms
- Hot pluggable server option
- High-performance Xeon-D® CPU with up to 16 cores
- Up to 64 GBytes DDR4 SDRAM, up to 1TB of SSD
- Independent supervision processor installs and monitors server software and status
- Expandable via two USB interfaces

Synchronization

- ITU-T G.8261 / G.8262 / G.8264 Synchronous Ethernet on all traffic interfaces
- Sync status message support
- IEEE 1588v2 Precision Time Protocol with hardware time- stamping
- ITU-T G.8265.1[F] and G.8275.1 PTP telecom profiles
- G.8265.1 telecom slave[F]
- G.8273.2 telecom boundary clock
- BITS-in and BITS-out with sync status messaging
- Combined 1PPS and TOD clock output
- Internal Stratum-3E clock with holdover

FSP 150-XG118PRO (CSH)

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
- MEF 10.3 hierarchical policing with token-share envelopes
- DiffServ supporting WFQ/SP mix
- Elephant flows management

Layer 3 traffic management[(F)]

- L2-L4 access control lists (ACL) for classification
- VRF-lite virtual routing and forwarding
- BGP and OSFP dynamic routing
- DHCP relay agent and DSCP remarking

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
- 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 alarm (EFM-OAM and SNMP trap option)
- Port mirroring (local and remote)[(F)]

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[(F)]
- Multi-CoS monitoring on EVCs
- IPFIX[(F)]
- Threshold-setting and threshold-crossing alerts
- Physical parameter monitoring for SFP optics with TCAs
- Temperature monitoring and thermal alarms

Low-touch provisioning[(F)]

- 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

- Local LAN port (RJ45) using CLI, NETCONF, and web GUI interfaces
- RS-232 using CLI
- 3G/LTE/Wi-Fi USB interface[(F)]

Remote management

- Maintains in-band VLAN-based management tunnels
- Fully interoperable with other FSP 150 products

Management protocols

- IPv4 and IPv6 DCN protocol stacks, including dual-stack operation and 6-over-4 tunnels
- Telnet, SSHv2, HTTPS, SNMPv3, NETCONF/YANG

Secure administration

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

IP routing

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

System logging

- Alarm log, audit log and security log

Regulatory and standards compliance

- FIPS 140-3 Level 2 compliant (certification pending)
- MEF CE 3.0 compliant
- IEEE 802.1Q (VLAN), 802.1p (Priority), 802.1ag (CFM), 802.3ah (EFM)
- 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
- RFC 2863 (IF-MIB), RFC 2865 (RADIUS), RFC 2819 (RMON), RFC 5357 (TWAMP)
- MEF-48 and MEF-49 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 compliant
- 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 (W x H x D):
  - AC: 445.5 mm x 43.6 mm x 366.6 mm
  - DC: 445.5 mm x 43.6 mm (1.7 in.) x 255.4 mm
- Operating temperature: -40ºC to +65ºC / -40ºF to 149ºF (hardened environment)
- Storage temperature: -40ºC to +70ºC / -40ºF to 158ºF (GR-63-CORE)
- Humidity: 5 to 95%, B1 (non-condensing)
- Redundant modular hot-swappable power supply:
  - AC: 110/240VAC, with over-voltage and over-current protection or
  - DC: -48 to -72VDC with over-voltage and over-current protection

[F] = future