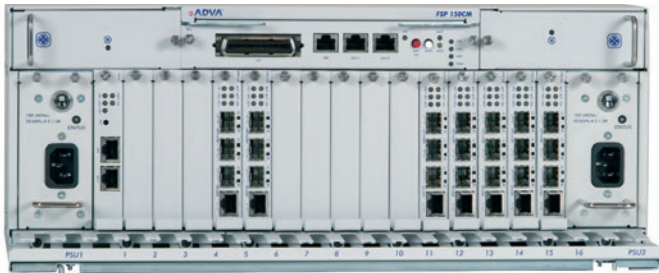


FSP 150CM

THE ETHERNET ACCESS PLATFORM



The ADVA FSP 150 family of Carrier Ethernet access products provides devices for Ethernet service demarcation, extension and aggregation to support delivery of intelligent Ethernet services both in-region and out-of-region. It allows service providers to ubiquitously deliver differentiated Ethernet services to customers in business and wholesale applications.

The FSP 150CM is a chassis-based system designed to provide Ethernet demarcation in a central office or other high-density environment. Primarily targeted at External Network-to-Network Interface (E-NNI) applications, it is well-suited for open access and wholesale carrier-to-carrier applications. It enables carriers to scale their Ethernet services to address these larger applications while providing a manageable, cost-effective platform that is optimized to deliver intelligent services.

With 16 slots that accept a variety of module types, the FSP 150CM can address different access technologies including fiber, PDH and SONET/SDH of various rates. Beyond different speeds and feeds, the FSP 150CM supports redundant modules and service interfaces for mission-critical Carrier Ethernet applications. With the optional integrated aggregation modules, the system can provide V-LAN, PBB-TE and MPLS multiplexing required for a variety of access network architectures.

The FSP 150CM interoperates with ADVA Optical Networking's FSP 150CC family of customer premise devices, as well as a wide range of industry-standard demarcation products, switches and routers. It provides a single management connection for the FSP 150CM platform and any subtended downstream devices. Low-touch provisioning capabilities ensure a cost-efficient service rollout and significantly reduce the need for truck rolls. With the extensive set of standards-based auto-configuration functions and remote OAM capabilities implemented across all products of the FSP 150 family, unskilled craft personnel can install and turn-up services without any onsite provisioning.

The FSP 150CM also supports ADVA Optical Networking's patent-pending Etherjack® demarcation technology for intelligent service management and definition. It allows carriers to provide intelligent Ethernet service demarcation points in their Carrier Ethernet access network that are compliant with the latest OAM standards such as IEEE 802.3ah, IEEE 802.1ag, ITU-T Y.1731 and RFC 2544.

ADVA Optical Networking designs and delivers all products with a commitment to optimize the total cost of ownership and return on investment. Leveraging the latest technologies for accelerating planning, simplifying installation and provisioning, streamlining network operations and increasing energy efficiency enables cost-effective and profitable Optical+Ethernet networking.

The FSP product family provides comprehensive Optical+Ethernet networking solutions for access, metro core and regional networks. ADVA Optical Networking is focused on the needs of enterprise and service provider customers deploying data, storage, voice and video applications.

FEATURES + BENEFITS

- E-NNI demarcation functions fulfill latest inter-carrier, intra-carrier and bulk retail service hand-off requirements in open access, large business Ethernet and mobile back-haul applications
- 16-slot high-density design and SFP-based optics support a variety of speeds and feeds, with minimal space, power and cost to reduce both CAPEX and OPEX
- Aggregation of remote-device management traffic simplifies large network applications and enables remote maintenance
- Standard-compliant design interoperates with a wide range of switching, routing, aggregation and transport products to reduce capital requirements
- Traffic aggregation for VLAN, PBB-TE and MPLS topologies supports network evolution essential for large-scale deployments
- IEEE 802.3ah, IEEE 802.1ag, ITU-T Y.1731 and RFC 2544 OAM tools enable seamless end-to-end performance management across third-party core networks

 **ADVA**TM
Optical Networking

SPECIFICATIONS



SYSTEM CAPACITY

- Distributed 80Gbit/s full duplex non-blocking capacity
- 16 slots for service and NEMI cards
- 1 slot for shelf-controller unit
- Multi-chassis communication for shelf and controller redundancy

NETWORK TOPOLOGY

- Multi-slot chassis feeding multiple locations across fiber, copper or leased media
- Remote FSP 150CP managed via EFM-OAM vendor extensions
- Remote FSP 150CC managed via in-band IP management tunnel
- Mid-span repeater providing remote management to FSP 150CP/CC devices on both client and network ports
- Network protection via ITU-T G.8031 (1:1 and 1+1 modes)
- Network path protection via Continuity Check Messages VLAN support
- 4096 VLANs (IEEE 802.1Q customer-tagged) and up to 400 Ethernet Virtual Connections (EVCs) using stacked VLANs (Q-in-Q service provider tagged) per slot
- 2-tag management (push/pop/swap) for c-tag and s-tag
- MAC address-to-VLAN tag translation – MAC (4k addresses) learning to VLAN per slot
- Flexible network encapsulation with Ethertype swap
- IEEE 802.1ad Provider Backbone (s-tag, c-tag)

TRAFFIC MANAGEMENT

- Classification (802.1P, 802.1Q, IP-TOS/DSCP)
- Policing (CIR/CBS/EIR/EBS) with dual-rate, 3-color marking and 64kbit/s resolution
- Hierarchical queuing/shaping
- Up to 8 classes of service (CoS) with WRED scheduling

ETHERNET OAM

- IEEE 802.3ah EFM-OAM
- IEEE 802.1ag Connectivity Fault Management
- Terminal and facility loopbacks on port- and EVC-level for all interfaces
- Cable diagnostics with benchmarks (electrical interfaces only)
- ITU-T Y.1731 fault management and diagnostic features
- Embedded RFC 2544 test generator and analyzer (ECPA)
- Multi-vendor SLA monitoring with UDP/ICMP echo and ICMP timestamp (ESA)
- Layer 2 Control Protocol Disposition (e.g., IEEE 802.3ah, IEEE 802.3x)
- Link Loss Forwarding

PERFORMANCE MONITORING

- RFC 2819 RMON Etherstats on a per-port and per-service basis
- Up to 32 PM bins with 15-minute or 1-day intervals
- Current and historical counters with threshold crossing alerts (TCA)

TIMING / SYNCHRONIZATION

- Synchronous Ethernet (ITU-T G.8261/2/4)
- Precision Clock Synchronization (IEEE 1588)
- Hardware-based performance measurement with μ sec accuracy
- NTP client-mode operation supporting multiple servers

LOW-TOUCH PROVISIONING

- DHCP/BOOTP auto-configuration
- 802.1x port authentication
- Text-based configuration files
- TFTP for configuration file copy

MANAGEMENT & SECURITY

Discovery

- Intra-shelf and inter-shelf service card and network element discovery via EFM OAM
- NEMI manages up to 128 remote nodes

Local management (NEMI)

- Serial connector (RJ48) using CLI
- Local LAN port (RJ45) using CLI, SNMP and Web GUI interfaces

Remote management (NEMI)

- Maintains VLAN and MAC-based management tunnels to FSP 150CC
- Interoperability with FSP 150CP via EFM OAM (plus extensions)

Protocols

- Telnet, SSH (v1/v2), HTTP/HTTPS, SNMP (v1/v2/v3)

Secure administration

- Database backup and restore
- Software downloads via FTP, HTTPS, SFTP or SCP
- Remote authentication via RADIUS/TACACS
- SNMPv3 with authentication and encryption
- Audit logging
- Access Control List (ACL)

IP routing

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

REGULATORY & STANDARDS COMPLIANCE

- IEEE 802.1Q (VLAN), 802.1p (Prio), 802.1ag (CFM), 802.3ah (EFM), 802.1x, 802.1ah (PBB), 802.1Qav (PBB-TE), 802.3ad (LAG)
- ITU-T Y.1731, G.8010/Y.1306, G.8011.1+2, G8012, G.8031 (APS)
- MEF-6, MEF-9, MEF-10.1, MEF-11, MEF-14, MEF-15 compliant and certified
- IETF RFC 2544 (Frame-Tests), RFC 2863 (IF-MIB), RFC 2865 (RADIUS)
- ANSI C84.1-1989
- ETSI 300-132-2, BTNR2511, ETS 300-019, ETS 300-019-2-[1,2,3], ETSI 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, 47CFR part 15, FCC part 15, Class B, Industry Canada

ENVIRONMENTAL

- Dimensions: 4U Chassis, 438mm x 175mm x 232mm (W x H x D), ETSI-compliant
- Storage temperature: -40 to +70°C (GR-63-CORE)
- Operating temperature: +5 to 40°C
- Humidity: 5 to 95%, B1 (non-condensing)
- Power AC: 90-264VAC (47-63Hz) with over-voltage and over-current protection
- Power DC: 36-72VDC with over-voltage and over-current protection
- Maximum power consumption: 250 Watts

INTERFACES

Interfaces

- Electrical, optical, CWDM and single fiber working for various distances

Protocol mediation

- 10/100/1000, 10G, T1/E1, nxT1/E1, T3/E3, nxT3/E3, OC-3/STM-1, OC-12/STM-4
- GFP over SONET/SDH (ITU-T G.7041), X.86, Ethernet over PDH with GFP/VCAT/LCAS (ITU-T G.8040/G.7042/G.7043), BCP/PPP, MPLPP, Frame Relay, chDLC

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

