Adtran

Data Sheet

FSP 150-GE100 Series

Compact Carrier Ethernet service demarcation at the edge

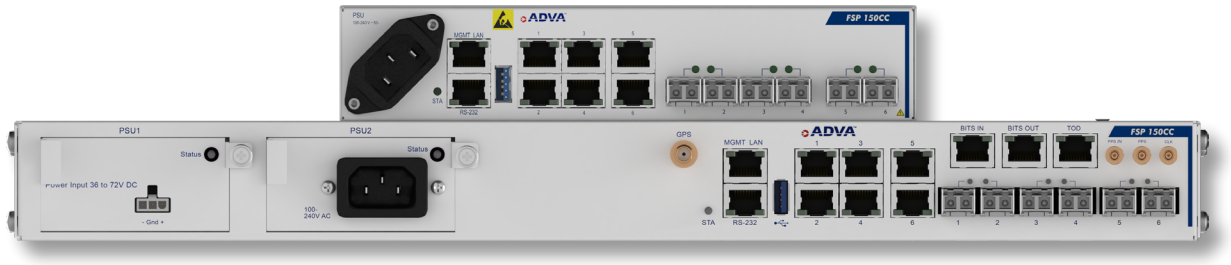
Benefits

- **Ideal for large-scale deployment**
  Flexible and easy creation of SLA-compliant and MEF-certifiable Carrier Ethernet 2.0 services
- **Low-touch provisioning and auto-configuration functions**
  Unskilled craft personnel can install and turn up services without onsite provisioning
- **Syncjack™ timing excellence**
  Assured, highly precise frequency, phase and time synchronization featuring SyncE and IEEE 1588 PTP
- **Indoor and outdoor installation**
  Different construction practice for rack-mount indoor as well as fanless outdoor applications
- **End-to-end service assurance**
  Advanced demarcation technology for support of stringent SLAs and integration with a wide range of back-office support tools
- **Ensemble management**
  Fast service roll out and tracking of big amounts of services

Overview

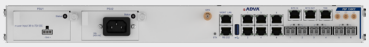
As Carrier Ethernet networks scale, network demarcation devices need to extend their capabilities, while not increasing size or management complexity. Communication service providers need an intelligent and compact Carrier Ethernet demarcation solution for indoor and outdoor, and with highly precise synchronization capabilities.

Our FSP 150-GE100 Series enables cost-effective delivery of assured fiber-based Carrier Ethernet 2.0 services for mobile backhaul and wholesale Ethernet applications. This series of ultra-compact first-mile demarcation devices provides a full range of multi-rate Ethernet interfaces. The temperature-hardened design and optional network link protection ensures the highest service availability even in harsh environments. Low touch provisioning and an extensive set of standards-based auto-configuration functions and remote OAM capabilities ensure cost-efficient service rollout and reduce the need for truck rolls. What's more, our FSP 150-GE100 series supports Synchronous Ethernet and IEEE 1588v2 PTP and with our Syncjack™ technology provides tools for precise timing distribution, monitoring and assurance.



FSP 150-GE100 SERIES

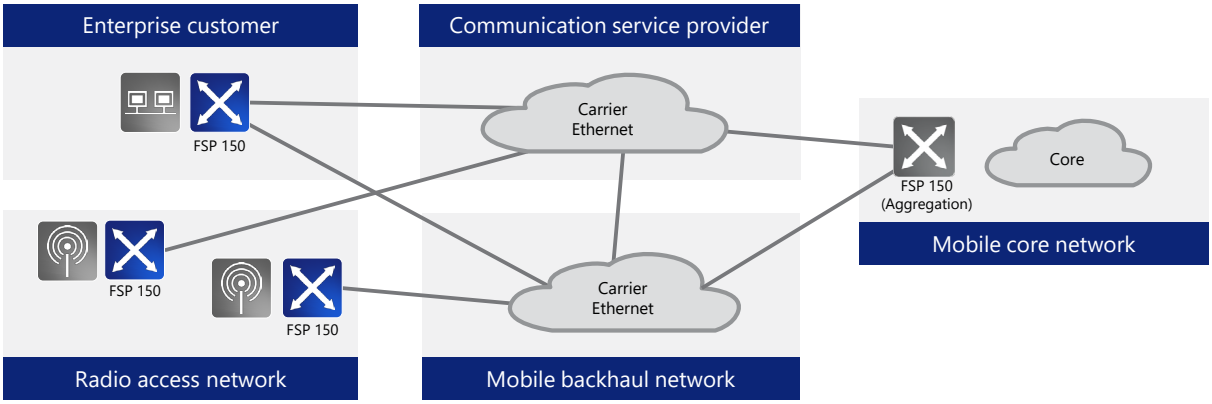
FSP 150CC-GE100 series at a glance

	Product	Key applications and features
	**FSP 150-GE104**	Ultra-compact Carrier Ethernet demarcation for business services featuring integrated PSUs and four 10/100/1000BaseT or 100/1000BaseX (SFP) ports
 	**FSP 150CC-GE112** **FSP 150CC-GE114**	Ultra-compact Carrier Ethernet demarcation for business services featuring integrated PSUs and two (GE112) / four (GE114) 10/100/1000BaseT or 100/1000BaseX (SFP) ports
	**FSP 150CC-GE114S**	Ultra compact cell site demarcation featuring integrated PSUs and precise and assured synchronization delivery (SyncE and IEEE1588v2)
	**FSP 150CC-GE114SH**	Compact cell site demarcation featuring redundant hot-swappable PSUs, precise and assured synchronization delivery (SyncE and IEEE1588v2) and a built-in GPS receiver
 	**FSP 150CC-GE114H** **FSP 150CC-GE114PH**	Multi-tenant demarcation device for business services featuring redundant hot-swappable PSUs, four 10/100/1000BaseT or 100/1000BaseX (SFP) ports and dry contact alarms; the FSP 150CC-114PH adds power over Ethernet (PoE) on all four access ports

Applications in your network

Business services and cell site demarcation

- Large-scale mobile backhaul and wholesale offerings of intelligent Carrier Ethernet 2.0 services compliant with the latest OAM standards
- Delivery of SLA-based synchronization services
- Replacement of traditional T1/E1- or GPS-based synchronization with highly accurate synchronization and controlled delivery of timing information across packet backhaul networks



Product specifications

Access capacity

- Two[1] / Four[2-7] 10/100/1000BaseT or 100/1000BaseX (SFP) ports
- Power over Ethernet (PoE) on all four access ports (IEEE 802.3at and 802.3af)[5]

Network interface

- Two 10/100/1000BaseT or 100/1000BaseX (SFP) ports[1-6]
- Two 100/1000BaseX (SFP) ports[7]
- One network port can be defined as an additional access port

Network interface redundancy

- IEEE 802.3ad Link Aggregation – active/standby mode with optional load balancing
- ITU-T G.8032 Ethernet Ring Protection Switching[2-7]

Synchronization[3,6]

- ITU-T G.8261 / G.8262 / G.8264 Synchronous Ethernet on all interfaces
- ITU-T G.8275.1 Telecom Profile
- Sync status message support
- IEEE 1588v2 precision time protocol for time of day
- 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
- 16[1] / 32[2-6] Ethernet virtual circuits (EVC)
- Jumbo frames support up to 9612 Bytes

Traffic management

- Acceptable client frame policy: tagged or untagged
- Service classifi cation 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 Token Sharing[7]
- Weighted-Fair Queuing[7]
- ACL classification[7]

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
- Terminal and facility loopbacks on port- and EVC-level for all interfaces
- Cable diagnostics with benchmarks (electrical 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)

Low-touch provisioning

- DHCP / BOOTP auto-configuration
- Text-based configuration files
- TFTP for 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 64[1] / 128[2-6] simultaneous SOAM flows
- Threshold-setting and threshold-crossing alerts
- Physical parameter monitoring for SFP optics, including TCAs
- TWAMP-lite[2,4,7]
- Temperature monitoring and thermal alarms

FSP 150-GE100 SERIES

Management and Security

Local management

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

Remote management

- Maintains in-band VLAN and MAC-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, SSH (v1 / v2), HTTP / HTTPS, SNMP (v1 / v2c / v3)
- NETCONF[7]

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 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[1-6]
- 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.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)
- 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 compliant[1-6]
- Telcordia GR-499, GR-63-CORE, SR-332[1-6]
- 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): 1RU compact chassis,
  - 220mm x 44mm x 212mm /8.7" x 1.75" x 8.4" [1–3,7]
  - 439mm x 44mm x 212mm / 17.3" x 1.75"x 8.4" [4–6]
  - ETSI-compliant
- Operating temperature:
  - -40 to +65ºC (hardened environment)[1-6]
  - 0 to +50ºC[7]
- Storage temperature: -40 to +70ºC (GR-63-CORE)[1-6]
- Humidity: 5 to 95%, B1 (non-condensing)
- Integrated PSU[1–3,7] / Redundant Modular PSU[4–6]: 110/240 VAC, -48 to -72VDC with over-voltage and over-current protection
- Maximum power consumption: 20W[1–4,6] / 25W[7]/ 200W[5]
- Dry alarm contacts[4-6]

Product Legend

[1] FSP 150CC-GE112
[2] FSP 150CC-GE114
[3] FSP 150CC-GE114S
[4] FSP 150CC-GE114H
[5] FSP 150CC-GE114PH
[6] FSP 150CC-GE114SH
[7] FSP 150-GE104

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