

Alcatel-Lucent Intelligent Services Access Manager FX

FANT-F 480G NETWORK TERMINATION CARD | RELEASE 4.3

The Alcatel-Lucent ISAM FANT-F Network Termination card is an ISAM controller board that provides service and network intelligence in the access node. It is used in Alcatel-Lucent 7360 ISAM FX shelves, providing a 480-Gb/s switching matrix, making it the ideal controller for fiber deployments. The Alcatel-Lucent ISAM FANT-F Network Termination card supports up to 40 Gb/s connections to each line card slot.



The FANT-F Network Termination card provides four configurable Small Form Factor Pluggable (SFP)+ cages supporting 10 Gb/s, and 1-Gb/s links for subtending, direct user or network interfaces. Optional hardware variants are available for applications requiring high-stability clock, building integrated timing source (BITS) interface and Synchronous Ethernet (SyncE). The FANT-F Network Termination card runs the same field-proven IP protocol stack as the Alcatel-Lucent aggregation routers, supporting Ethernet, IPv4, IPv6 and Multi-Protocol Label Switching (MPLS).

Two FANT-F Network Termination cards can be run in Active-Active redundancy mode, ensuring system reliability and providing a total system switching capacity of 960 Gb/s and delivering up to 80 Gb/s to each line card slot. Each card is equipped with an Application Enablement Processor, providing a future-ready platform enabling application intelligence innovations.

Features

- 480 Gb/s switching matrix (bidirectional)
- Active-active redundancy
- Supports 40-Gb/s connection to each line card slot (FX-4 and FX-8)
- Supports 20-Gb/s connection to each line card slot (FX-16)
- 4 x 10 Gigabit Ethernet (GE) network links with 1 + 1 link redundancy
- Subtending and aggregation support
- Optional hardware variants with BITS/SyncE with high stability clock, BITS and SyncE clock recovery
- MPLS forwarding with enhanced routing support: Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Border Gateway Protocol (BGP) and Intermediate System-to-Intermediate System (IS-IS)
- Powerful, embedded Application Enablement processor
- Industrial hardened

Benefits

- Offers non-blocking architecture
- Delivers 99.999% availability
- Supports Carrier Ethernet services
- Provides fast recovery of critical services with MPLS
- Reduces number of aggregation network ports required, through self-aggregation feature
- Supports clock-critical applications: voice, leased lines and mobile backhauling
- Positions operator for future application-intelligence innovations using Application Enablement Processor
- Deploys in indoor and outdoor environments

Technical specifications

External interfaces

- 4 ports optical 10 Gigabit/1 Gigabit interface
- Optical and electrical connection through SFP and SFP+ standards
- 1 port electrical 10/100/1000BASE-T port (RJ-45 connector)
- 2 ports BITS interface: only on BITS variant; 1 port in, 1 port out, using ITU-T G.703 (RJ45 connectors (ANSI interfaces available on sperate GFC unit))
- 1 port local craft management (LCM) interface using RS-232 (RJ-45 connector)
- 1 Alarm CutOff (ACO) button for alarm cut off and lamp test interfaces, for example, signaling and communication (ANSI ACO available on sperate GFC unit)

Forwarding

- Ethernet bridging
- Virtual local area network (VLAN) stacking for residential and business access
- 802.3ad trunking: Link Aggregation Control Protocol (LACP)
- Multiple Spanning Tree Protocol (MSTP), Rapid Spanning Tree Protocol (RSTP) and Spanning Tree Protocol (STP) support
- 4,095 VLAN IDs, VLAN stacking (Q in Q), 128,000 move, add and change (MAC) addresses
- MPLS
- L3 forwarding (IPv4)
- RIP v2, OSPF v2, BGP v4, IS-IS routing protocols
- Multicast forwarding, high-performance Internet Group Management Protocol (IGMP) processing, IGMP proxy
- IP Quality of Service (QoS)

- Dynamic Host Configuration Protocol (DHCP) relay, multiple instances
- Access control lists, denial of service protection
- Malicious MAC-move protection
- Lawful intercept
- Billing and accounting support
- Hubbing support
- Ethernet ring connectivity
- Support for central broadband remote access server (BRAS) and distributed service-edge models
- Point-to-Point Protocol (PPP) connectivity to single or multiple systems
- Up to 32,000 subscribers per system (16,000 in L3 deployment)

Deployment

- Simple Network Management Protocol (SNMP)
 - SNMPv1 (RFC 1157)
 - SNMPv2 (RFC 1909-1910)
 - SNMPv3 (RFC 3410-3418)
- Command-line interface (CLI): telnet (RFC 854), Secure Shell (SSH)
- Transaction Language 1 (TL1): with or without SSH
- FTP:
 - File Transfer Protocol (FTP) (RFC 959)
 - Trivial File Transfer Protocol (TFTP)
 - Secure Shell File Transfer Protocol (SFTP), for backup and restore and software download
- Simple Network Time Protocol (SNTP)
- Syslog: CLI screen, external server, local file
- Loopback interface
- CLI and TL1 operator authentication: local or Remote Access Dial-In User Server (RADIUS) based

- Alarm management
 - Severity handling
 - Lists: current, snapshot, delta
 - Logs
 - Filtering
- Troubleshooting counters
- IP Ping and traceroute
- Central processing unit (CPU) and memory load
- SFP digital diagnostics
- Performance monitoring
- Protocol tracing
 - DHCP
 - Address Resolution Protocol (ARP)
 - IGMP
 - Output to CLI, syslog or local file
- Offline migration system configuration

Eco-sustainability

- Switch ports can be selectively powered down

Standards compliance

- Environmental
 - ETS 300 019-1-1 storage – Class 1.1 (weather-protected, partly temperature-controlled locations)
 - ETS 300 019-1-2 transport – Class 2.3 (packed, public transportation)
 - ETS 300 019-1-3 stationary use – Class 3.1E (temperature-controlled locations), when used in fully populated Alcatel-Lucent 7360 ISAM racks (with more than one shelf)
 - ETS 300 019-1-3 stationary use – Class 3.3 (not temperature-controlled locations), when used in standalone Alcatel-Lucent 7360 ISAM shelves
 - NEBS Level 3 compliant (SR-3580)
 - GR-63-CORE

- Protection: ITU-T K.20/K.45
- Safety: IEC 60950-1/EN60950-1
- EMC and ESD
 - ETS 300 386 V1.3.3 (2005-04) for telecommunication network equipment
 - GR-1089-CORE
- European directive 2002/95/EC on the restriction of the use of certain hazardous substances (RoHS)

Operating conditions

- -5°C to +45°C (23°F to 113°F) inlet/ambient temperature range, when used in fully populated Alcatel-Lucent 7360 ISAM racks (with more than one shelf)
- -40°C to +65°C (-40°F to +149°F) inlet/ambient temperature range, when used in standalone Alcatel-Lucent 7360 ISAM FX shelves
- Over-temperature sensors and over-temperature shutdown
- 5% and 85% RH (Relative Humidity)
- GR-3108-CORE for operating temperature and humidity for Class 2 equipment
- Compliant with environmental requirements as described in ATT-TP-76200
- Support for tropical environments (50°C, 99% RH)

Dimensions

- Height: 405 mm
- Width
 - Top: 225 mm
 - Bottom: 205 mm
- Board-to-board pitch: 30 mm

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