

## Nokia ISAM FANT-G

### Network Termination card

The Nokia Intelligent Services Access Manager (ISAM) FANT-G Network Termination (NT) card is a controller board that provides service and network intelligence in the Nokia 7360 ISAM FX access node. It has a 1.28 Tb/s switching matrix and delivers 40 Gb/s throughput to each line card, making it ideal for delivery of high capacity services in fiber networks.

### Product overview

The Nokia ISAM FANT-G NT card provides 100 Gb/s, 10 Gb/s and 1 Gb/s links, which can be used for network interfaces, user connection or subtending. It supports applications that require a high stability clock, Building Integrated Timing Supply (BITS) interface, Synchronous Ethernet (SyncE) and Time of Day (ToD IEEE 1588). The FANT-G NT card runs the same field-proven IP protocol stack as the Nokia aggregation routers and supports Ethernet, IPv4, IPv6 and Multiprotocol Label Switching (MPLS).

Two FANT-G NT cards can be run in active-active redundancy mode, ensuring system reliability and enhancing a total system switching capacity to 2.56 Tb/s and delivering 80 Gb/s to each line card slot.

### Features

- 1.28 Tb/s switching matrix (bidirectional)
- Active-active redundancy
- Supports 40 Gb/s connection to each line card slot (all ISAM FX shelves)
- Supports additional 8 x 10 Gb/s or 1 x 100 Gb/s connections via NT input/output card
- 4 x 1 Gb/10 Gigabit Ethernet (GigE) + 1 x 100 GigE network links with 1+1 link redundancy
- Supports subtending and aggregation
- Clock synchronization: BITS/SyncE/ToD with high stability clock, BITS, SyncE and ToD 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)
- Industrial hardened



## Benefits

- Market leading switching and backplane capacity
- Delivers 99.999% availability
- Supports Carrier Ethernet services
- Provides fast recovery of critical services with MPLS
- Reduces the number of aggregation network ports required through self-aggregation feature
- Supports clock critical applications: voice, leased lines and mobile backhauling
- Deploys in indoor and outdoor environments

## Technical specifications

### Product specifications

#### External interfaces

- 4 configurable small form-factor pluggable (SFP)+ cages supporting 1 Gb/10 Gb interface
- CFP4 cage supporting 100 Gb/s link
- Optical and electrical connection through SFP and SFP+ standards
- 1 port electrical 10/100/1000BASE-T port (RJ-45 connector)
- 2 ports BITS interface: 1 port in, 1 port out, using ITU-T G.703 (ANSI interfaces available on separate GFC unit)
- ToD interfaces
- 1 port local craft management (LCM) interface using RS-232 (RJ-45 connector)
- 1 alarm cutoff (ACO) button for alarm cutoff and lamp test interfaces; for example, signaling and communication (ANSI ACO available on separate 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
- Layer (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 (ACLs), denial of service (DoS) protection
- Malicious MAC move protection
- Lawful intercept (LI)
- Billing and accounting support
- Hubbing support
- Ethernet ring connectivity
- Supports central broadband remote access server (BRAS) and distributed service-edge models
- Point-to-Point Protocol (PPP) connectivity to single or multiple systems
- Up to 16,000 subscribers per system

## 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
- File Transfer Protocol (FTP):
  - 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 trace route
- 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
- Equipped with thermal sensors for temperature-controlled cooling, resulting in maximum efficiency and low acoustic noise

## 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 Nokia 7360 ISAM racks with more than one shelf
  - ETS 300 019-1-3 stationary use – Class 3.3 (non-condensing, not temperature-controlled locations), when used in standalone Nokia 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 2011/65/EU on the restriction of the use of certain hazardous substances (RoHS)

## Operating environment

- -5°C to 45°C (23°F to 113°F) inlet/ambient temperature range, when used in fully populated Nokia 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 Nokia 7360 ISAM FX shelves



- Over-temperature sensors and shutdown
- GR-3108-CORE for operating temperature and humidity for Class 2 equipment
- Compliant with environmental requirements as described in ATT-TP-76200

#### Dimensions

- Height: 405 mm (15.9 in)
- Width
  - Top: 225 mm (8.9 in)
  - Bottom: 205 mm (8.1 in)
- Board-to-board pitch: 30 mm (1.2 in)

#### About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

Nokia operates a policy of ongoing development and has made all reasonable efforts to ensure that the content of this document is adequate and free of material errors and omissions. Nokia assumes no responsibility for any inaccuracies in this document and reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

© 2023 Nokia

Nokia OYJ  
Karakaari 7  
02610 Espoo  
Finland  
Tel. +358 (0) 10 44 88 000

Document code: (August) CID200612