



SAFN

FLEXIBLE NUMERIC ACCESS SYSTEM

SAFN is a flexible transport/access system specifically designed for private networks, with the aim of realizing networks integrating access and transport for data, voice and video transmission.

It is a very reliable system, offering several advantages:

- Device from the users to the carrier, with integrated access and transport functions to reduce costs and plants complexity (wiring, spare parts, maintenance).
- Flexibility of use both on Circuit Switching Network (CSN) and on Packet Switching Network (PSN), guaranteeing the return on investment in the migration between networks.
- Modular architecture meeting diversified –low / medium / huge- traffic requirements.
- Typical Utility functionalities, such as VoIP Gateway and IP-PBX to carry out Service Telephone Systems, teleprotection functions towards distance protections.
- Specific Utility interfaces, such as digital I/O, interfaces towards protection and teleprotection equipment, specific interfaces of railway telephony.
- Easy reconfiguration in case of bandwidth increase.

SNMP Agent and availability of one NMS on open platform, without additional licenses (OpenNMS).

Performances

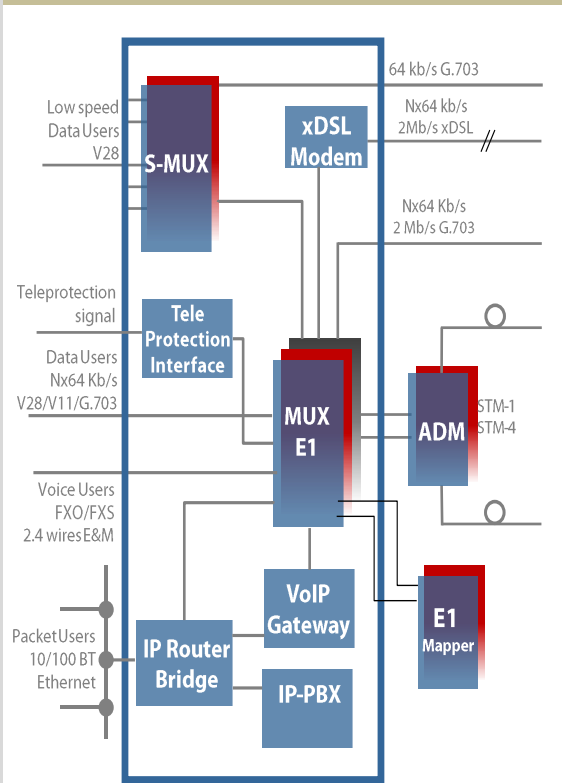


- SDH and PDH solutions in only one equipment
- Operation on CSN and PSN networks
- Specific interfaces for TELCO and Utilities
- Network Management System on an open platform

Performances



- TM and ADM function in SDH (STM-1/STM-4) networks
- PDH multiplexing functions on 2 Mb/s streams and sub-multiplexing on 64 Kb/s streams
- Ethernet transport on PDH/SDH (bridging on PDH and EoS streams with GFP, VCAT and LCAS functions)
- SDH protection with Sub-Network Connection Protection (inherent) (SNCP/I) and SCNP (non-intrusive) (SNCP/N), linear Multiplex Section Protection (MSP 1+1)
- Carrier and channel protection on PDH level, with channel protection included subrate level
- Management of alternative paths on Packet Switching Network
- Point-to-Point, Point-Multipoint and Omnibus connections
- Voice connections, with conference circuits
- Integrated teleprotection function
- Integrated VoIP Gateway and IP-PBX functions, to carry out Service Telephone Systems
- Management of signals/commands (digital I/O) from and towards outer devices
- External synchronism and priority list for the synchronization sources
- Redundancy of the common parts
- Non-blocking switching matrix
- Channels allocation regardless of the physical location within the subrack
- EOC for remote diagnostics, configuration and software updating
- Configuration adjustment without any traffic interruption
- Network Management System on open platform, with circuit-manager and circuit-viewer functions



Modularity and scalability

Concerning SDH transport, SAFN has an incoming capacity of 16xSTM-1 equivalent and outgoing capacity of 16xSTM-1 equivalent. Concerning PDH multiplexing, SAFN has a capacity of non-blocking cross-connection up to 8x8 2Mb/s.

SAFN supports the ITU-T X.50 sub-multiplexing over the 64 kb/s channels too, thus allowing the bandwidth optimization, with a capacity of non-blocking cross-connection up to 32x32 X.50 frames. In channels with CAS signalling, the signalling cross-connection is associated to the relevant voice channels.

Wide range of Interfaces

SAFN can be equipped with several interfaces:

- 622 Mbit/s (STM-4) on SFP (from 15 to 150 Km)
- 155 Mbit/s (STM-1) on SFP (from 15 to 150 Km)
- E1 Mapper ((21xE1 – 42xE1)
- 2 Mbit/s unframed G.703
- Nx64 Kb/s, 2 Mb/s framed G.703/G.704
- SHDSL up to 2 Mbit/s, over single or double copper pair
- Ethernet 10/100BTX
- Ethernet 100BFX

- Ethernet 1000 BASE-SX/LX/ZX
- Nx64 kb/s V.11/V.35/V.36
- 64 kb/s G.703 co-directional with or without E/M signalling
- Nx64 kb/s IEEE C37.94
- X.20/X.21 V.28 data channel, from 1.2 Kb/s to 19.2 Kb/s
- Digital I/O from/towards outer devices, remote control and teleprotection functions
- 2/4 wires, with or without E/M signalling
- FXO (Foreign Exchange Office)
- FXS (Foreign Exchange Subscriber)

Mechanical features



Synchronization

STM-n, E1 ports

External 2 Mb/s and 2 MHz inputs/outputs

Priority and quality (SSM) synchronization algorithms

Power supply

SAFN/Sx: 48/60 Vdc

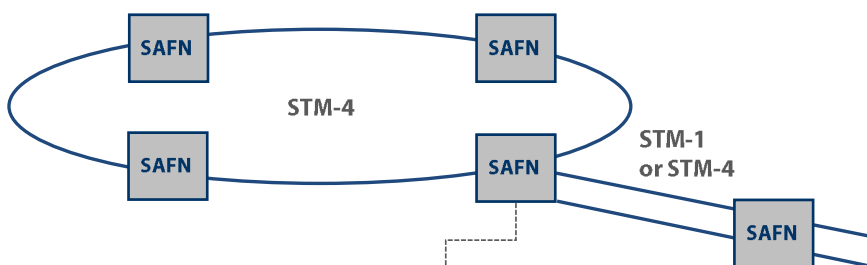
Power Consumption (max): 180 W

Mechanical structure

SAFN/Sx subrack:

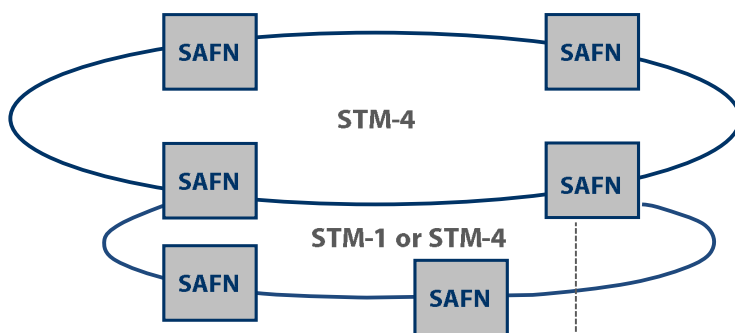
- with front connector panel:
450 mm H, 480 mm W, 240 mm D
- with rear connector panel:
250 mm H, 480 mm W, 240 mm D

Application: Branch on regional ring



- Up to 8 x E1 native mapper/framer toward PDH switch (access mux tributaries)
- Non-blocking cross-connection up to 16xSTM-1 incoming and 16xSTM-1 outgoing (provided by SDH expansion)
- Up to 8 Ethernet 10/100 or 2 GbE (provided by SDH expansion)
- Up to 21-42 x E1 G.703 ports (provided by SDH expansion)

Application: regional ring and local ring



- Up to 8 x E1 native mapper/framer toward PDH switch (access mux tributaries)
- Non-blocking cross-connection up to 16xSTM-1 incoming and 16xSTM-1 outgoing (provided by SDH expansion)
- Up to 8 Ethernet 10/100 or 2 GbE (provided by SDH expansion)
- Up to 21-42 x E1 G.703 ports (provided by SDH expansion)

