

- SAFN/S-SAFN/SE consists of one subrack including the redundant base units and up to 8/14 tributary/ aggregate units
- The subrack is equipped with a front (SAFN-S/SE)
- All models can be inserted into an ETSI N3 standard rack with 300 mm depth

### SYNCHRONIZATION

- In SDH application, synchronism can be configured to operate:
  - ✓ In FREE mode (Free Running)
  - ✓ Locked to one of the incoming STM1-/STM-4 streams
  - ✓ Locked to one dedicated external signal 2.048 MHz (micro-coax connector on the rack, SYNC\_IN\_SDH)
- SAFN provide also a synchronisation signal SYNC\_OUT\_SDH, 2.048 MHz, available on the micro coaxial connector on the rack.
- Each ADM STM1/4 card has her own couple of signals
- SYNC\_IN\_SDH and SYNC\_OUT\_SDH on the rack of SAFN-SE:

- ✓ SYNC1\_IN\_SDH and SYNC1\_OUT\_SDH, connected to the card inserted in the first slot
- ✓ SYNC2\_IN\_SDH and SYNC2\_OUT\_SDH, connected to the card inserted in the second slot
- Each SYNCH OUT is locked to the actual synchronisation signal of the corresponding ADM STM1/4 card.
- In the SDH system, the SAFN synchronization state is managed by SSM (Synchronization Status Message) corresponding to the MSOH (Multiplex Section OverHead) S1 byte.

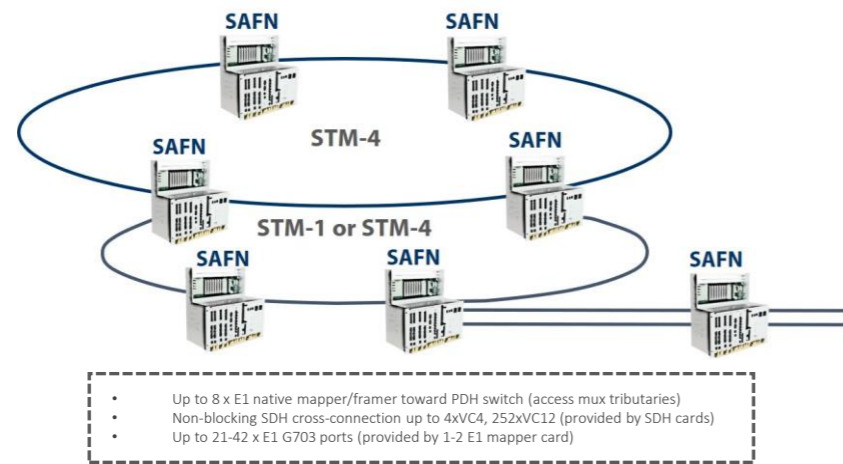
### POWER SUPPLY

- SAFN/S-SAFN/SE: 24/60 Vdc
- Power Consumption (max): 180 W

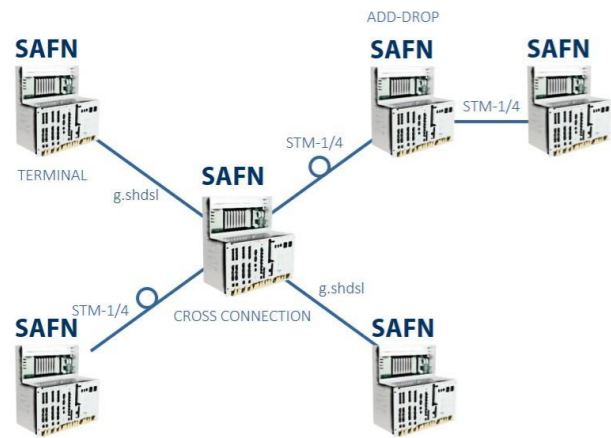
### MECHANICAL STRUCTURE

- SAFN/S-SAFN/SE subrack:
  - with front connector panel: 450 mm H, 480 mm W, 240 mm D

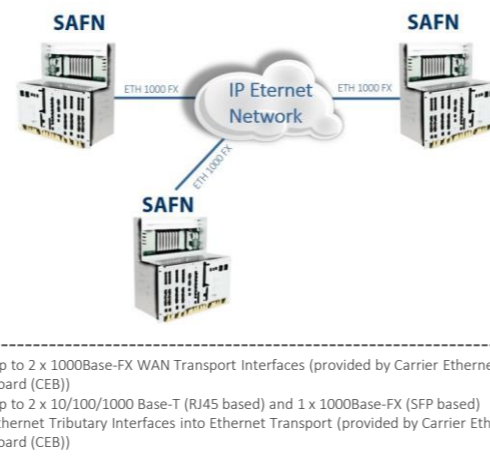
Application 1: SDH regional ring and local ring



Application 2: access & transport SDH application



Application 3: WAN transport application



## Realizing Networks

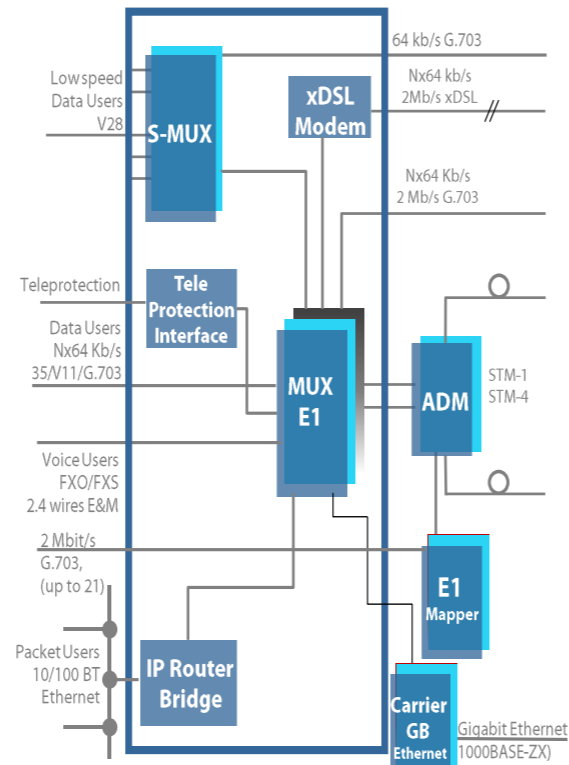
### SAFN flexible numeric access system

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 matching diversified traffic requirements (low / medium / huge)
- » Typical utility interfaces as FXS, FXO, E&M 2/4 wire ports, low speed data ports and Ethernet tributary
- » Easy reconfiguration in case of bandwidth increase
- » SNMP Agent and availability of Network Management System Selta SNMS-ON based on Open-NMS platform

## PERFORMANCES

- SDH and PDH solutions in only one equipment
- operation on CSN and PSN networks
- specific interfaces for Telco and Utilities
- 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
- 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
- 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 4 interfaces STM-1/4. Concerning PDH multiplexing, SAFN has a capacity of non-blocking cross-connection. 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 1000 BFX
- 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)

## SAFN-PC / SNMS-INTEGRATED MANAGEMENT TOOL WITH GRAPHICAL INTERFACE

The SNMP agent on board and the MIB availability allow employing every kind of multivendor SNMP Manager for the SAFN equipment. SELTA offers a Craft-Terminal (SAFN-PC) and an Element Manager/ Network Manager (SNMS-ON) to manage the configuration and the diagnostic of the whole network, both locally and remotely through an Embedded Operation Channel. SAFN-PC employs the standard PC platforms. SNMS is implemented over Open NMS platform.

