

NORTEL TN-4X

## Managed SDH Multiplexers for Regional Networks and Core Access



Nortel's Managed TN-4X Multiplexer

The Nortel TN-4X is a fully managed, highly featured SDH fibre transmission system designed for a wide variety of network applications. It can be configured as an STM-1 or STM-4 multiplexer, in terminal, regenerator, Add/Drop or cross-connect configurations.

The core shelf and port cards support full non-blocking capacity of over 1000 VC-12 equivalents (2 Mbit/s) with direct access to 168 x 2 Mbit/s terminations. Optional extension shelves can provide up to 504 x 2 Mbit/s terminations.

The TN-4X consists of a core system and a range of interface plug-in units which include 2 Mbit/s, 34 Mbit/s /45 Mbit/s, dual function, 140 Mbit/s and STM-1e, STM-1o and STM-4o.

TN-4X ATTRIBUTES

- Full range of SDH and PDH traffic interface ports supported
- Full, flexible bandwidth management
- Distributed bandwidth management for optimum utilisation of network resources
- Software configurable equipment topologies including point-to-point, drop and insert, self-healing ring, hub and cross-connect
- Advanced OSI based element management

- Sophisticated automatic fault diagnostics, network reconfiguration, and inventory management
- High equipment availability through duplication of core units
- Path protection and SNC-P protection schemes

- In service upgrade from STM-4 operation to STM-16
- Software rich systems architecture with software download capability
- Simplified management and installation procedures
- Extensive use of Application Specific Integrated Circuits (ASICs) for high reliability, low power consumption, small physical size, and high port density

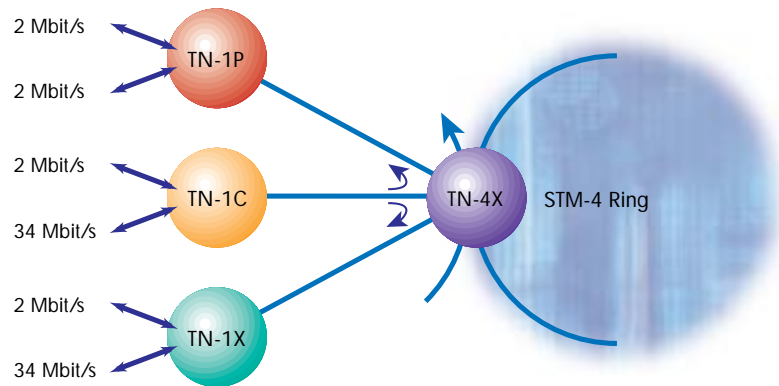
Features of the TN-4X

- Standards conformant STM-4 multiplexer
- Flexible architecture allows terminal mux (TM), regenerator, Add/Drop multiplexer (ADM) and local cross-connect (DXC) configurations
- Aggregate and Tributary protection
- Full access, mixed payloads
- 75 and 120 ohm 2 Mbit/s ports
- Access to overhead bytes
- ATM ready
- Network management communications using D bytes
- Engineering OrderWire (EOW)
- External alarm inputs and outputs
- Sophisticated UNIX-based management system
- Portable craft terminal
- G.826 Performance Monitoring
- Remote software download
- Interface to Nortel regional and network level management systems

Added value provided through Network Management

TN-4X is managed by the Management System (TN-MS) which provides sophisticated Operations, Administration, Maintenance, and Provisioning (OAM&P) facilities for all Nortel's SDH equipment. Nortel's highly distributed, feature rich implementation of the ITU-T Telecommunications Management Network (TMN) architecture is field-proven managing the company's transmission products, providing unmatched flexibility, real-time processing power and data storage capacity.

### TN-4X as DXC connecting STM-4 rings with STM-1 collector network



The TN-4X system integrates with Nortel's other products to provide a managed transmission network. This network offers facilities that support the operator in building, operating, and maintaining the network.

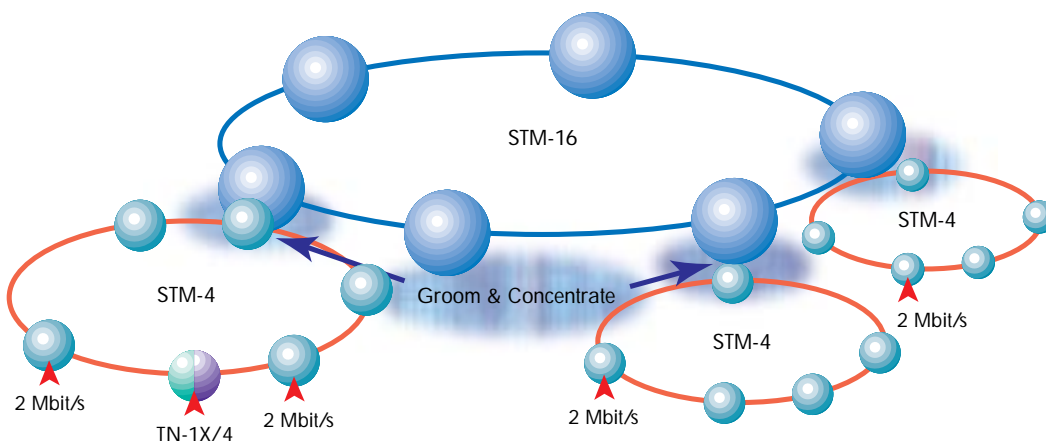
- Configuration management: provides the capability to manage elements in a number of different topologies simultaneously.
- Fault management: provides alarm gathering, logging, fault localisation, alarm filtering and alarm prioritising.
- Software management: includes upgrade services, software load images, and cut-over to new software loads.

- Local terminal access: provides maintenance access and management capabilities.
- Management communications: provides full management compatibility across a SDH network through the use of OSI CMISE communications protocols. Management messages are routed between elements standards compliant ECC.
- ISO ES-IS and IS-IS routing protocols: provide fully automatic management and message routing, allowing for arbitrary and complex network topologies and self-healing in the event of communications path failure without user intervention.

### Why Nortel?

- Leader in the development and deployment of SDH
- Complete product portfolio with total functional coverage
- Products designed with high reliability to support revenue earning customer applications and services
- Full turnkey capability
- Global telecommunications solutions supplier
- Integrated management systems bringing:
  - rapid service delivery
  - reduced operating costs
- Proven standards compliance through interconnection with multi-vendor networks

### Grooming and concentration of VC-12 traffic for delivery to STM-16 networks



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