

## Fujitsu FBX-A Quad-Port Ethernet NTE

The FBX-A Quad Port Ethernet NTE (Network Terminating Equipment) extends the existing FBX NTE Range allowing data transport, consolidation and grooming of Ethernet Services.

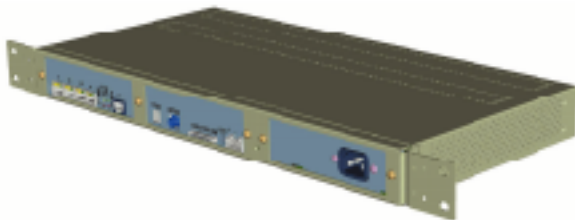


Figure 1: 4 port Ethernet NTE fitted with rack mounting flanges

### Main Features

- Cross domain (TDM/ATM/Ethernet) management
- Industry-standard Ethernet Interfaces for inter-connection of customer equipment at remote sites
- Service separation across multiple ports by the use of VLAN technology
- ATM Transport for ultimate flexibility of bandwidth allocation
- TDM Transport for economic use of legacy networks
- Software download for future enhancements. Such as next generation networking, advanced filtering and QoS allocation schemes

### Main Applications

- Double-ended configuration for Point to Point transport of Ethernet Frames
- Multi-ended configuration for consolidation of Ethernet Frames from multiple sources
- VLAN operation for service separation
- Single-ended configuration for inter-working with core networks or interconnecting to 3rd party networks

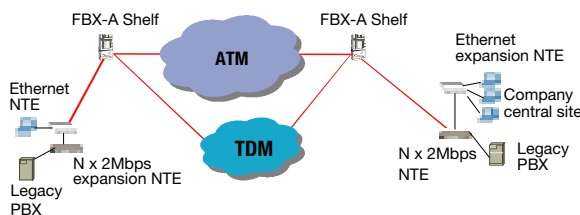


Figure 2: Point to Point LAN Extension

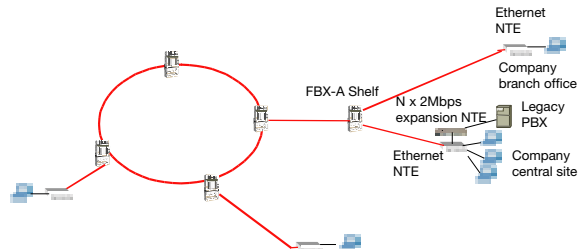


Figure 3: Point to Multi-point using VLANS

### Customer Benefits

- Ethernet Services can be deployed over a wider geographic area than dark fibre solutions
- Customer bandwidth can be increased or decreased without equipment change-outs
- High granularity bandwidth options can be provided by virtue of using ATM as the transport bearer rather than SDH
- Designed to work with the FBX range of products, which have a proven track record and have been widely deployed
- Same Management Platform used to manage SDH, ATM and Ethernet features
- Software downloadable for future feature upgrades e.g. VLAN tag stacking

### FBX RELATED FEATURES

#### Management

- Managed by FBX Element Manager ("FENS AN FBX")
- Command Line Interface for advanced configuration provided within FENS AN FBX
- Comprehensive Ethernet Statistics, via CLI from FENS AN FBX
- Local HHT port for SDH management of the NTE

#### NTE Types

- Single fibre versions
- Expansion versions

#### FBX Configurations

- Fibre NTE versions connect directly to single-port and triple-port FBX-A customer interface cards.
- Expansion NTE versions connect, indirectly to single port and triple port FBX-A customer interface cards, via a protected or unprotected TDM fibre NTE.

Continued over

## ETHERNET FEATURES

### Ethernet Port Types

- Four 10/100BaseT ports

### ATM Port Types

- ATM over VC3 or VC4 SDH Bearers
- 256 ATM VC connections with I.610 F5 loop-back support
- Egress shaping to PCR/MCR
- RFC2684 (RFC1483) LLC/SNAP Bridging Encapsulation
- RFC1577 Encapsulation for management VC connection

### Frame Types

- Ethernet and VLAN frame types supported
- Max size 1518 octets for Ethernet frames and 1522 octets for VLAN tagged frames

### Bridging

- 802.1d bridging and 802.1q bridging (VLAN bridging)
- IGMP Snooping
- MAC Address Learning
- Configurable ageing and forwarding table size
- Overlapping MAC addresses on multiple VLANS

### VLAN tags

- Fully managed assignment per port VLAN tagging of untagged frames
- Full 4096 VLAN address range support
- One or more VLAN per VC connection or Ethernet interface when pre-tagged.

### Filtering

- VLAN Ingress violations
- Destination MAC address filtering
- Source/Destination MAC address filtering
- Protocol filtering
- Multicast filtering

### Spanning Tree

- STP (802.1d), RSTP (802.1w) and MSTP (802.1s)

### Traffic Management

- Four QoS priority queues
- QoS Classification on VLAN priority bits
- Packet WFQ scheduling using 4 QoS queues
- Tail drop during congestion
- ATM WFQ scheduling

### Throughput

- Full line rate supported on 10 & 100BaseT interfaces.

### Statistics

- Comprehensive on demand Ethernet packet statistics
- Per connection and per port ATM statistics

## PHYSICAL SPECIFICATIONS

### Interfaces

- Four 10/100BaseT Ethernet Ports (using RJ45 connectors)
- One -48vdc interface
- Optional IEC60320/C14 mains socket

#### *Interfaces only provided on Fibre Based NTEs*

- One Type 2/3 expansion port (master end)
  - One RJ45 operator HHT port (Note, used for SDH - not for ATM or IP)
  - One single fibre interface using a single SC uniter
- #### *Interfaces only provided on Expansion Based NTEs*
- One Type 3 expansion port (slave end)

### Visual Indicators

- Per port LEDs for mode, status and activity on Ethernet ports
- Test, Customer, Network and Power LED's for mode and status of the base NTE unit fitted to front and rear of unit.

### Thermal Design

- Natural convection

### Power

- <20W @ -48vdc
- Optional internal mains to -48vdc power converter module with external IEC60320/C14 mains socket

### Mechanical

- 1U construction
- Wall mounted, 19" rack mount, ETSI rack mount, or free standing in a rack.
- All customer interfaces provided on the rear of the NTE.

### EMC

- CE Marked - class B EMC

### Safety

- Safety to specifications GS6, GS8 and EN41003. Note, GS6 refers to EN60950-1:2002
- Optical safety to IEC825 Class 1

### Temperature/Climatic

- Operational Temperature Range: -5 to +45oC. Relative Humidity: 5 to 95% (95% @ 30oC)
- Operational to ETSI standard ETS 300 019-1-3 Class 3.2
- Storage to ETSI standard ETS 300 019-1-1 Class 1.1
- Transport to ETS 300 019-1-2 Section 4.2 class 2.2

### Shock and vibration

- Shock and vibration to ETS 300 019-1-1 Class 1.1.
- Vibration, sinusoidal: 1.5 mm displacement at 2 to 9 Hz  
5.0 m/s<sup>2</sup> acceleration at 9 to 200 Hz
- Shock response: 70 m/s<sup>2</sup> peak acceleration Figure 6 (Type L).

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THE POSSIBILITIES ARE INFINITE

