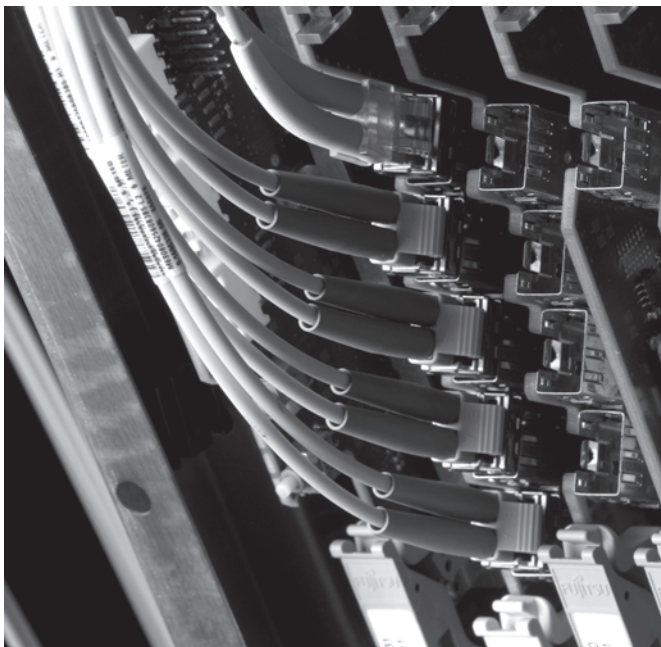


GEOSTREAM FBX

Fibre Multi-Service Provisioning Platform



The communications world is changing, led into new territory by accelerating demand for high-bandwidth, high-quality multimedia packet-based services.

Pressure is building behind the pace of change: pressure to deliver high quality of service, to respond to unpredictable demand, and to minimise costs and provisioning time. Your network must be ready to meet the oncoming wave and responsive to its opportunities.

Fujitsu understands the profound fluctuations in the communications industry. We've been involved in every major development in the business over the past 20 years. In anticipation of the next phase of growth and change, we've developed a lasting technology foundation for the evolving wideband network.

AGILE, ROBUST INNOVATION

An Established Optical Networking System

The GeoStream Access Gateway FBX is an established optical networking system, built to take networks forward into the emerging media-rich market.

In common with Fujitsu's Flashwave 9500, GeoStream FBX provides a modular fusion of carrier Ethernet and TDM (PDH/SDH) transport and access technologies. It delivers high bandwidth, high quality, packet-based services in today's multi-protocol packet environment.

The GeoStream FBX is the first type of network element to deliver both:

- **Agile** service delivery traditionally found across existing and latest (carrier Ethernet) service elements.
- **Robust** bulk transport scalability, combined with the operational stability that has defined optical networking.

Trusted to Deliver

Fujitsu has built dependable, scalable optical networks for customers of all types and sizes throughout every sector of the communications market. With almost 500,000 network elements deployed in North America, Europe and Asia Pacific, Fujitsu sets the standard for performance, reliability, and carrier-grade quality. Our customers rely on us for outstanding service and support throughout the lifetime of our products. We know the value of reliability, longevity, and innovation. The GeoStream FBX is built for all three.

Optical Networking for Circuits, Cells and Packets

The GeoStream FBX applies Fujitsu's time-tested optical networking heritage to deliver a general-purpose aggregation and transport infrastructure for today's multi-service environment. This platform can take your network into an uncertain and bandwidth-aggressive future while preserving your legacy technology assets, reducing both capital and operating expenditures.

Manageable Scalability, Unique Integration

The GeoStream FBX is the definitive Multi-Service Access Node (MSAN). Its unique hardware and software architecture integrates Ethernet, ATM and TDM technology in a single shelf that drives cost out of today's metro network (over 80% of the cost of an upgrade can be saved). As high-bandwidth, high-quality multimedia packet-centric services begin to dominate, service providers can deploy the GeoStream FBX platform to enjoy the cost and manageability that optical networking has always offered.

The GeoStream FBX solution family consists of common interface cards and system software across a variety of configurations, traffic capacity ranges, and entry prices. This allows service providers to cost-optimize their network.

Key Technical Advantages

- **Purpose-built** modular design.
- **VLAN-based** connection-oriented Ethernet transport technology to deliver private-line quality Ethernet aggregation and connectivity services over fibre.
- **Next-Generation** TDM technology to support the full range of network services while retaining operational continuity with existing networks.
- **High density** multi-service, multi-rate TDM interfaces.
- **30G TDM** or **12G packet** bandwidth in one quarter of a rack.

Key Network Benefits

- **Reduces** equipment space five- to ten-fold.
- **Delivers** private-line equivalent QoS for Native Ethernet.
- **Consolidates** ATM/TDM/Ethernet transport networks.
- **Leverages** and extends today's optical network.
- **Supports** TDM and Ethernet transport from a single integrated infrastructure.
- **Controls** network ownership costs with field-proven operational process support.

Multi-Service Provisioning Platform (MSPP)

In metro network architecture, GeoStream FBX acts as an MSPP and provides distributed access aggregation and transport. The higher-layer service elements continue to be specialised, feature-rich, and less widely distributed. The GeoStream FBX infrastructure elements are general purpose, widely distributed, lower cost-per-bit and simple to manage.

CRITICAL NETWORK APPLICATIONS

Triple-Play Networks

The GeoStream FBX MSPP features integrated SDH and mature Ethernet transport. This offers bulk bandwidth delivery and high capacity packet aggregation, while eliminating several costly network elements.

Consolidated Ethernet Services Networks

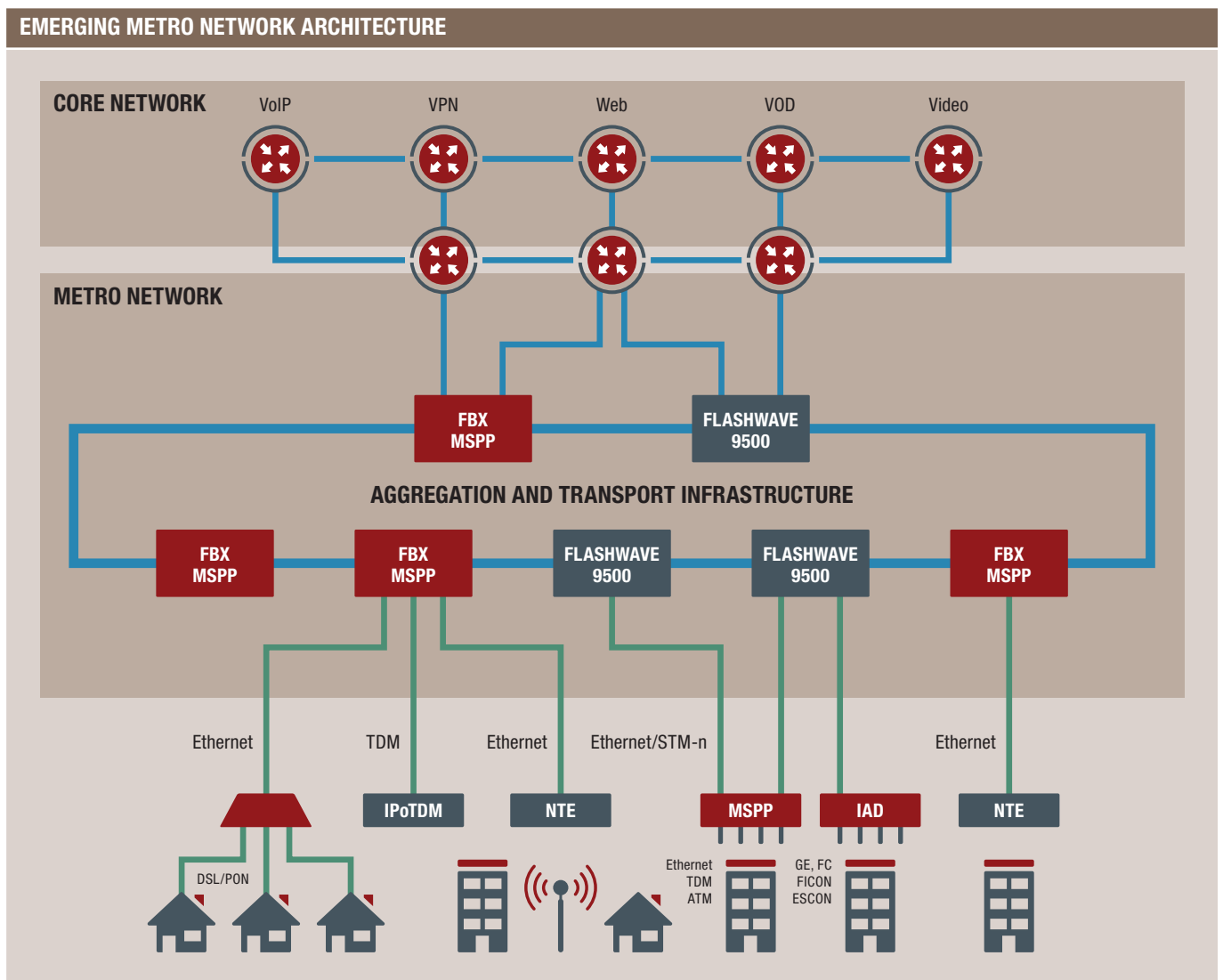
Service providers can consolidate their Ethernet infrastructure by supporting E-LINE services as well as today's popular Ethernet-over-TDM services. Access, Aggregation and Backhaul functions can all meet service provider's requirements.

Consolidated Core Metro/Regional Networking

The GeoStream FBX platform provides complete NGADM devices in a single managed network environment with next-generation grooming capabilities. This provides more scalable support for a growing Ethernet infrastructure.

Wireless Backhaul

The GeoStream FBX system supports native TDM and ATM and so provides an ideal vehicle to manage latency-sensitive wireless applications (2G, 3G and beyond), regardless of access and transport technology.



FEATURES AND SPECIFICATIONS

System Capacity

- 30G non-blocking TDM grooming
- 6G in, 6G out non-blocking Packet grooming
- 12 Universal interface slots

Network/Client Protection Architectures

- Optical ring/SNCP
- TDM protection architecture (network, section)
- Ethernet protection
- BFD protection

Fabric Support

TDM Hub using High-order Time Slot Switch Unit, supports:

- TDM switching capability of 30 Gbit/s
- High order TDM switching (VC-4 level)
- Supports MSP for optical interface units
- Support for SNCP (slots 1~12)
- Carrier Ethernet service support using GFP

Ethernet Shelf using Ethernet Packet Switch Unit, supports:

- Ethernet packet switching capability of 12 Gbit/s (1 Gbit/s per slot 1-12)
- Configurable VLAN/Carrier Ethernet switching
- Supports link aggregation of Ethernet bearers
- Supports link OAM (IEEE 802.3ah) and service OAM (IEEE 802.lag)

TDM Shelf using High-order/Low-order Time Slot Switch Units, supports:

- TDM switching capability of 2.5 Gbit/s
- VC-3, VC-4 and VC-12 cross-connect functions
- Supports MSP for optical interface units
- Support for SNCP

Synchronisation

- Fully managed
- Internal Stratum 3 timing source
- Synchronisation Status Messaging (SSM)
- E1 Building Integrated Timing Supply (BITS) primary and secondary clock output/input
- Line timing

Equipment Protection

- Switch fabric
- Management complex
- Interface card (1+1)

Operations

- TL-1 (OSI based, OSPF)
- SNMP
- Software download and remote memory backup/restore

Environmental Compliance

- IEC 60825-1
- CE compliant

Physical Characteristics

- FBX Sub-rack (H x W x D) 750 x 450 x 280 mm
- Weight: 15 kg
- Cards (H x W x D) 215 x 20 x 212 mm
- Weight: < 0.6 kg
- PSUs (H x W x D) 215 x 52 x 250 mm
- Weight: 2.5 kg
- Connector Panels (H x W x D) 215 x 20 x 85 mm
- Weight: < 0.3 kg

Operating Environment

- Operations temperature range -5 to +45° C
- Storage temperature range -40 to +70° C
- Humidity range Up to 95% at +30° C (non-condensing)

Interfaces

TYPE	TECHNOLOGY	
FE	100Base-BX 100Base-FX 100Base-LX	100Base-LX40 100Base-T electrical
GigE	1000Base-ZX 1000Base-SX 1000Base-LX	1000Base-BX 1000Base-ELX 1000Base-LLX
STM-1	SR-1, LR-1	
STM-4	SR-1, LR-1 & LR-2	
STM-16	SR-1, LR-1 & LR-2	
PDH	E1, E3/T3	

Number of Service Interfaces

INTERFACE	PORTS/ CARD	PROTECTED PORTS/SHELF	UNPROTECTED PORTS/SHELF
STM-1	4	24	48
STM-4	4	24	48
STM-16	1	6	12
FE Copper	6	36	72
FE Optical	10	48	96
GigE	4	24	48
E1*	21	-	126
E3*	3	18	36

* E1/E3/T3 can also be provided via remote NTE

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