FBX-D
Multi-Service
Broadband Cross-Connect
xDSL
Solution
FBX-D
ADVANCING BROADBAND COPPER ACCESS

The growing demand for broadband services is a key driver in the international telecommunications market. To ensure service providers can achieve competitive edge, it is essential to provide these facilities cost-efficiently and effectively. The critical issues are to maximise the use of existing infrastructure and minimise any environmental disruption during deployment.

Fujitsu’s FBX-D DSLAM fulfils these requirements - an advanced xDSL Access Multiplexer, it is specifically designed to maximise the use of copper access networks. It provides a modular, future-proof platform that enables straightforward, rapid service deployment, encompassing voice, data, multimedia applications and new-generation telecommunications services. The system consolidates multiple access lines into high-speed switching network interfaces, reducing the amount of equipment and cabling required for broadband support. In addition, FBX-D’s high line-density minimises the floor space required for deploying DSL equipment.

Designed and manufactured by Fujitsu Telecommunications Europe Limited, FBX-D forms part of Fujitsu’s FBX series of market-leading broadband crossconnect equipment, developed to provide network operators with a choice of high-performance access solutions. FBX-D initially supports ADSL DMT technology, with designed support for the emerging SDSL and VDSL systems. The FBX-D DSLAM complements Fujitsu’s access range of multiplexers, including the InterAccess™ HDSL solution, the FBX-Access SDH platform, the FBX-HDSL system for customer SDH, and the FSX-2000 multi-service DLC system.

MAXIMISING THE COPPER ACCESS NETWORK
- straightforward xDSL access via existing copper infrastructure
- modular, future-proofed system design for cost-efficient deployment
- high line-density minimises installed footprint
- efficient network utilisation
- multiple network interfaces
- optimised ATM support for broadband services
- centralised and remote line subsystem topologies
- design support for ADSL, SDSL and VDSL from a single node
- support for advanced services
- specific splitters to suit different countries and territories
- complementary range of modem/routers
- compliant with international standards

Fujitsu’s FBX-D DSLAM solution incorporates a number of self-contained modules - the ATM Switch Hub, Line Card Sub-System and Splitter Module - which are connected together to form the complete DSLAM system. The FBX-D Switch Hub contains an ATM switch and the network interfaces, as well as the auxiliary traffic interfaces. These are used for subending ATM-DSLAM traffic or for connection to other network devices, such as a Voice Gateway and Broadband Access Server. Each Switch Hub services up to 64 Line Card Sub-Systems. The Line Card Sub-System (LCSS) is the system’s ADSL line circuit module. Meeting the international ADSL standards, the LCSS provides 31 ADSL channels, a management capability, plus support for splitter or splitter-less operation. The Splitter Module provides the POTS splitter functionality, with a range of active and passive modules available to suit the requirements of different countries.
Fujitsu's FBX-D provides xDSL access via the copper infrastructure, with services consolidated and/or concentrated using an ATM switch hub. This also provides VC queuing and VP shaping towards the network, and flexible QoS for network and user traffic. The modularity of the FBX-D makes it possible to expand the network interface rate from STM-1 to STM-4, with a software download capability enabling remote upgrades of the system software. The system is configured, maintained and managed remotely by Fujitsu's Access Network Management System - FLEXR-EM/AC. This system interfaces to the Network Element (NE) via SNMP, with the managed components of the NE encompassing the Hub, LCSS, and Splitter Module, as well as the ATU-R remote modem located at the customers' premises.

FBX-D IN THE ACCESS NETWORK

FBX-D is a highly flexible platform, designed to support the expanding range of existing and future services.

- The inherent flexibility of the FBX-D's modular architecture allows the LCSS and associated Splitter Modules to be either co-located with the ATM Switch Hub or housed remotely.
- The FBX-D is designed to provide support for low-bandwidth VC connections to an Advanced Services Controller. Inter-working with Voice Gateways and a Broadband Access Server (BAS) will also be supported.
- The FBX-D is compliant with the full-rate DMT and G.Lite international standards, ensuring optimum interfacing in all territories. Fujitsu's remote modem products support ATM25, 10BaseT, USB, and PCI interfaces, as well as combined DSL and router functionality.

FBX-D - ADVANCING BROADBAND COPPER ACCESS

- Modular and flexible design supports ADSL, SDSL and VDSL from a single node
- Remote Line Hub working to support large and small site topologies
- High line-density, with scalable capacity initially supporting 1984 user-lines per Hub
- Remote modem compatibility
- ADSL compliance to DMT international standards - full-rate (ANSI T1.413 issue 2 & ITU G992.1) G.Lite (ITU G992.2)
- Flexible QoS support for network and user traffic, through class of service priority queueing
- Support for different ATM traffic classes - CBR, VBR and UBR
- IP flow control - EPD and PPD
- Multiple VCs per user
- Single network interface support for 32k connections
- Single platform support for STM-1, STM-4 and OC3 Network Interfaces
- Increased network interface traffic capacity, by sublingering ATM-DSLAM traffic
- Designed support for advance services and SVCs, plus network interface connections to other devices such as voice gateways and/or BAS
- "Best in Class" Access Management System
- Future upgrades via Software Download Capability
- A complete solution, through full integration with Fujitsu's Access Multiplexer products

NETWORK MANAGEMENT

The FBX-D can be configured, monitored and controlled remotely, via a LAN (10-BaseT) or in-band ATM connection to FLEXR-EM/AC - Fujitsu's central multi-technology Access Network Management System. Local configuration and monitoring is supported by a web-based craft terminal interface. FLEXR-EM/AC runs on an industry standard platform and is a modular TMN-based system, which provides centralised network surveillance, alarm and status interrogation, as well as configuration and administration. The system monitors the Network Elements, allowing the operator to identify and respond quickly to an event condition anywhere in the network.
Fujitsu - Communicating the Future

Fujitsu Telecommunications Europe Ltd is part of the Fujitsu Group and a strategic division of Fujitsu Telecommunications of Japan - currently one of the world's largest communications equipment suppliers. Based in Birmingham, England, Fujitsu Telecommunications Europe forms a key component in Fujitsu's global manufacturing, R&D and service infrastructure, and has a long-established track record for product and service innovation.


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