Build the network of the future today!

IBM 8285 Nways ATM Workgroup Switch

- **Flexible platform for desktop, backbone or value-added ATM functions like ATM Circuit Emulation**

- **Greater throughput than Ethernet or Token-Ring networks**

- **Bandwidth on demand for a new generation of applications such as desktop videoconferencing with guaranteed ATM Quality of Service (QoS)**

- **Low cost of the 8285 and equally low operating cost with copper wiring (including voice-grade wiring) for a quick and affordable option for desk-top ATM**

- **Imbedded ATM Forum LAN Emulation (LANE) servers**

- **Base-unit connectivity for up to 12 users and a server**

- **Rich management features and sophisticated routing algorithms for easy integration into large, complex networks**

- **Improved end-user productivity and a competitive edge for opening new business opportunities**

The IBM 8285 Nways® ATM Workgroup Switch is a multipurpose, expandable ATM switch that simplifies ATM implementation. It has twelve 25-Mbps ATM ports for desktop or server connections and a feature slot for optional 155-Mbps I/O cards for connecting to a server or another switch. I/O cards for 155-Mbps ATM on multimode fiber (MMF) and single-mode fiber (SMF) are supported.

The 8285's capabilities can be extended by using an optional expansion unit that can accommodate up to three IBM 8260 Nways Multiprotocol Switching Hub ATM modules. For a list of these models, see "ATM modules orderable for Expansion Unit for Models 00B and 00P" in the specifications table.

The expansion unit allows the 8285 to handle larger workgroups or act as a switch for a single building. For example with the expansion unit you can connect up to forty-eight 25-Mbps ATM adapters to the 8285 with four 155-Mbps connections as well. Plus, you can add the ATM Circuit Emulation (ACE) Module and consolidate your voice/PBX traffic across the same link.

Product Overview

The IBM 8285 ATM Workgroup Switch offers many functions, features and benefits, some of which are described in the following sections.

Circuit emulation

The new Litton Network Access Systems ATM Circuit Emulation (ACE) Card for IBM 8265/8260/8285 transports circuit emulation traffic such as PBX traffic over an ATM backbone. The ACE card is designed as a daughter card that fits on the IBM ATM carrier module (1-slot). The ACE module connects DS1/E1 telephony interfaces to the ATM network or any constant-bit-rate (CBR) source with a DS1/E1 interface. By transporting these services over the ATM network, the network administrator further utilizes the ATM network investment and eliminates leased lines dedicated to CBR services.

LAN Emulation

The 8285 includes two sets of an integrated ATM Forum-compliant LANE Server and Broadcast Unknown Server, eliminating the need for an external LANE Server (although you can choose to use one). An emulation function resolves MAC-to-ATM address translation and performs broadcasts and point-to-multipoint multicasts. Both Ethernet and Token Ring are supported. Clients can be assigned to up to two virtual LANs (VLANs) and can use either ATM Forum UNI 3.0 or UNI 3.1.

ATM core-switching

In common with the 8260 Hub the 8285 supports many ATM specifications, including the ones that are described in the following list:

- Supports Switched and Permanent Virtual Circuits (SVCs and PVCs)

- Can be simultaneously connected to UNI 3.0 and 3.1 devices and can dynamically map one into the other, easing support of mixed-level devices

- Supports point-to-point and multipoint connections

- Supports reserved bandwidth (Constant Bit Rate [CBR] and Variable Bit Rate [VBR]) and best effort (Unspecified Bit Rate [UBR]) classes of service with independent queuing capability

- Provides topology services and automatic route computation that uses available trunk bandwidth and by-passes failed nodes and links

- Supports PNNI-1, Interim Inter-Switch Protocol (IISP) and IBM-specific extensions in line with the PNNI framework

- Can be used to interconnect local ATM networks over an ATM WAN, providing Permanent Virtual Path (PVP) tunneling for switched connections between end systems

- Has high switching capability with a single-stage switching fabric at 4.2 Gbps, full-duplex

- Supports all AAL types

- Uses field-programmable gate arrays (FPGAs) for field upgrades to the latest ATM Forum specifications

- Provides input and output cell buffers in the base model and all ATM expansion modules for support of LAN bursty traffic

- Provides flow-control and back-pressure mechanisms to avoid cell loss

ATM Control Point

The 8285 has an ATM Control Point that integrates ATM call-switching functions and network control functions such as call setup processing, topology discovery and route selection. It takes full advantage of the capabilities of the 8260. Some of the functions that it provides are described in the following list:

- Can calculate the network topology and calculate dynamic routes and parallel paths

- Can assign virtual paths (VPs) per QoS for separation of traffic types on a single physical interface over different VPs with different QoS

- Incorporates rewritable flash memory for easy code updates and future enhancements

ATM Switch-on-a-Chip

This is a high-performance ATM switch chip that allows for transmission rates up to 1.6 Gbps per port.

Configuration methods

A DB-25 EIA 232 connector can be used to attach an ASCII terminal for initial configuration. A SLIP interface is available and SNMP management is also supported. In-band management is available using Classical IP or LANE or both. Operators can trace selected functions, initiate and save dumps and transfer files for remote analysis. The command line interface is the same as for the 8260.

Cabling

The 8285 supports UTP categories 3, 4 and 5; 120-ohm categories 4 and 5; and 150-ohm STP cabling between the switch and attached devices as follows:

- UTP category 3: 100 m (328 ft)
- UTP category 4: 150 m (492 ft)
- UTP category 5: 160 m (524 ft)
- STP: 300 m (984 ft)

Management software

Network management support is provided by no-charge updates to the Nways Campus Manager for Windows and the Nways Campus Manager ATM for AIX and HP-UX. Support for the 8285 base model is now available for Windows® and AIX®. For more information about these products, see the Network Management section of this Product Guide.

Workgroup Solutions promotional offer

The IBM Nways ATM Workgroup Solutions combine the IBM 8285 twelve-port 25-Mbps Nways ATM Workgroup Switch and Expansion Unit with the appropriate number of either ISA or PCI 25-Mbps TURBOWAYS® adapters. Workgroup Solutions are available in 12-, 24-, 36- and 48-port versions, making ATM workgroup networking attractive to any organization at a price that is comparable to other high-speed LAN technologies. And integrated ATM Forum-compliant Token-Ring and Ethernet LANE and Classical IP are included in these solutions at no additional charge. To buy Workgroup Solutions you order the 8285 Model 00P and then select features for it. For a list of the features, see "IBM Nways ATM Workgroup Solutions orderables for Model 00P" in the 8285 specifications table.

8285 combined with the 8260

When the 8285 Nways ATM Workgroup Switch is combined with backbone ATM switches, such as the 8260 Nways Multiprotocol Switching Hub, the following benefits reduce the cost of ownership:

- Simplification of network design and planning
- Reduction in the number of different LAN technologies in the network
- Enablement of two true VLANs that are logically assigned to the workstations rather than to the physical port in the network

The 8285 also provides these other major benefits:

- Low-cost ATM workgroup switch
- Expansion to 48 connections at the ATM 25-Mbps interface, with multiple-feature, 155-Mbps ports
- High switching capacity using IBM's Switch-on-a-Chip switching matrix
- Full support of ATM QoS
- Full ATM Forum standards compliance
- Numerous IBM extensions for switch-to-switch interfaces, fully compatible with the 8260
- Integrated ATM Forum LANE servers
- Full set of network management and operations features
- The IBM ATMKit Development Program to make the 8285 open for third-party development

8285 models

Two models of the 8285 are available, 00B and 00P. They are technically equivalent but are priced differently. Model 00B has a list price that is discountable, like the list price for the 8260. Model 00P, which cannot be discounted, is offered at a special bundled price that includes TURBOWAYS ISA/PCI adapters for each ATM 25-Mbps port. The bundled price is calculated to drive down today's U.S. price per port.

Circuit emulation benefits

- Flexibility

  Structured and unstructured circuit emulation services:

  - Support for structured emulation enables users with PBXs or any other channelized services such as DS1/E1 multiplexers and channel banks to be connected across PVCs on an ATM network.

  - Unstructured services are suitable for the transport of signals from video codes or any other unchannelized interfaces where non-standard framing is used by the end equipment.

- Minimizing ATM bandwidth

  Rather than send a full DS1/E1 service over the ATM network, the administrator can save ATM bandwidth by sending only the DS1/E1 time slots that are actually needed to support the desired service.

- Saving on leased-line costs

  With multiple ports available on each module, networks with private PBX transport between sites can be consolidated onto the ATM network. For example the leased lines of a PBX with multiple DS1/E1 lines connecting to other PBXs may now connect over a common ATM network infrastructure. This can save significant operational dollars.

- Compatibility with the 8260 as well as the 8285

  The ACE module can be used in both the 8260 and the 8285. This compatibility is well suited for applications requiring low-density remote connectivity.

8285 Nways ATM Workgroup Switch Specifications

8285 Nways ATM Workgroup Switch specifications

Description	Model	FC
8285 models		
Base unit	00B	
Base unit and 12 adapters	00P	

8285 orderables for Models 00B and 00P		FC
155-Mbps I/O Card MMF		5500
155-Mbps I/O Card SMF		5501
Universal Code Download Kit		3150
Expansion Unit		5502

Nways ATM Workgroup Solutions orderables for Model 00P	FC
Twelve 25-Mbps PCI adapters	5503
Twelve 25-Mbps ISA adapters	5504
8285 Expansion Unit with a 12-port 25-Mbps module and twelve 25-Mbps PCI adapters	5505
8285 Expansion Unit with a 12-port 25-Mbps module and twelve 25-Mbps ISA adapters	5506
12-Port 25-Mbps Module and twelve 25-Mbps PCI adapters	5507
12-Port 25-Mbps Module and twelve 25-Mbps ISA adapters	5508

ATM modules orderable for Expansion Unit for Models 00B and 00P	FC
12-Port 25-Mbps Concentration Module	5012
1-Port 155-Mbps MMF I/O Card	8510
ATM Control Point V3 (PNNI-1)	5509
2-Port 155-Mbps ATM Flex Concentration Module	5002
1-Port Fiber MMF ATM Flex I/O Card	8800
1-Port Fiber SMF ATM Flex I/O Card	8801
1-Port UTP/STP I/O Card	8802
4-Port 8281 ATM LAN Bridge Module	5204
UTOPIA ATM Carrier 1-Slot Module	5102
ATM Circuit Emulation (ACE) Modules for use with the UTOPIA ATM Carrier 1-Slot Module*	
4-port T1 card*	N/A
4-port E1 card*	N/A
8-port T1 card*	N/A
8-port E1 card*	N/A
1-Slot, 3-Port 155-Mbps ATM Module	5003
ATM firmware upgrade	5099
ATM WAN Module	5302
1-Port E3 I/O Card (Italy)	8501
1-Port E3 I/O Card (Germany)	8501
1-Port E3 I/O Card (Netherlands)	8501
1-Port E3 I/O Card (Australia)	8501
1-Port E3 I/O Card (Israel)	8501
1-Port E3 I/O Card (Belgium)	8501
ATM WAN Carrier Module	5602
4-Port E1/T1/J1 I/O Cards (no homologation)	8507
4-Port E1/T1/J1 I/O Cards (CE Mark countries)	8507
4-Port E1/T1/J1 I/O Cards (Switzerland)	8507
4-Port E1/T1/J1 I/O Cards (U.K.)	8507
4-Port E1/T1/J1 I/O Cards (Italy)	8507

*Note: Available from Litton Network Access Systems (*www.netaccys.com*)

Physical specifications

Base unit	Width: 440 mm (17.3 in.)
	Depth: 508 mm (20 in.)
	Height: 133.4 mm (5.3 in.)
	Weight: 12.8 kg (28.2 lb)
Base unit motherboard	Motorola 68040 at 25 MHz
	8 MB of DRAM, expandable to 16 MB
	4 MB of flash memory
Expansion Unit	Width: 440 mm (17.3 in.)
	Depth: 508 mm (20 in.)
	Height: 133.4 mm (5.3 in.)
	Weight*: 12.8 kg (28 lb)

*Note: Weight is for an empty expansion unit.

Certifications for radio frequency interference and safety compliance

FCC Class A

VDE Class B

VCCI Class A

CISPR22 Class B

CE Mark CSA NRTL/C

CB Certificate

Operating environment

Temperature: 10º to 40ºC (50º to 104ºF)

Relative humidity: 8% to 80% (non-condensing)

Maximum wet-bulb temperature: 27ºC (80.6ºF)

Calorific value: 44 kcal/hr

Electrical power: 0.54 kVA

Capacity of exhaust: 0.74 m³/min

Noise level: 43 dB

Leakage and starting current: 2.7 mA and 40 A, for 6 ms

Airflow requirements: 100 mm (4 in.) minimum rear, 300 mm (12 in.) minimum front

Key Customer Benefits

- The 8285 base unit is great for customers who want to take advantage of ATM in a small configuration without needing to link to a backbone.

- The 8285 is fully autonomous and provides all the features and performance to handle multimedia traffic in voice, data or video formats at a competitive price.

- With the Expansion Unit and the ACE module the 8285 provides a complete, low-cost circuit emulation solution—or the 8285 can act as a feeder for consolidation of leased lines in a campus environment.

- The 155-Mbps interface card allows you to link to a local server for higher bandwidth performance or (later) to an ATM back bone.

- The 8285 is a good entry-level product for customers who want to explore the possibilities of ATM by beginning with a small network of up to 48 ATM stations.

- The integration of the LANE Server and the Broadcast Unknown Server eases the migration from conventional LANs to ATM. IBM is among the first suppliers to implement Forum-compliant LANE.

- The optional Expansion Unit allows the 8285 to handle larger workgroups or to act as a switch for a single building. It enables you to plug IBM 8260 ATM modules into one of its three available slots to support as many as forty-eight 25-Mbps devices. With the 155-Mbps I/O cards on the 25-Mbps port modules, the 8285 has up to four OC3 ports, making it an extremely capable, cost-effective, entry ATM switch.

- The IBM 8285 is based on and is fully compatible with the powerful and proven architecture of the IBM 8260 ATM Hub. You do not need to learn different interfaces, languages or modes of operation to use the 8285 with the 8260 and other IBM ATM equipment.

- When the 8285 is used in combination with the IBM Nways Campus Manager products, management of the ATM network is greatly simplified.

- The IBM 8285 Nways Workgroup Solutions provide powerful ATM technology to the desktop at promotional prices to make it easy to build an entry-level ATM network.

Supplementary Information

The following sales tools are available for the 8285:

- Specification sheet:
  IBM 8285 Nways ATM Workgroup Switch, GA33-0380

- Information on the IBM 8285 is available at:
  www.networking.ibm.com/netprod.html
  www.networking.ibm.com/82a/82aprod.html

- The IBM Redbook is *IBM ATM Workgroup Solutions: Implementing the 8285 ATM Switch,* SG24-4817-00.