IBM 8265 Nways ATM Switch

- ***IBM's next-generation ATM switching technology for high-speed switched backbone networks***
- ***Industry-leading bandwidth, price/performance, standards-based ATM functionality***
- ***Advanced traffic management functions such as:***
  - ***Priority queues per Quality of Service (QoS)***
  - ***Early- and partial-packet discard***
  - ***Policing per virtual circuit (VC)***
  - ***Traffic shaping per virtual path (VP)***
  - ***Statistics per VC***
  - ***Buffering***
  - ***Port mirroring***
- ***New ATM Control Point Switch***
  - ***Additional processing power for improved signaling performance***
  - ***Exceptional networking capacity for the largest Enterprise and Service Provider ATM networks***
  - ***Superior reliability and serviceability***
  - ***Integrated, fault-tolerant power control***
  - ***PNNI full hierarchy support***
- ***Port capacities of:***
  - ***56 OC3***
  - ***14 OC12***
- ***WAN interfaces from T1/E1, including IMA, to OC3 speeds***
- ***Support for these existing 8260 ATM features:***
  - ***LAN switching***
  - ***WAN connectivity***
  - ***MSS module***
- ***High-availability features for mission-critical operations***
- ***Investment protection and compatibility with current 8260 ATM features***

The latest in ATM backbone switching

Introducing a new platform for the next generation of high-end ATM backbone networks—the IBM 8265 Nways® ATM Switch. It's the most powerful of IBM's growing family of ATM switches, with an open architecture designed to address ATM backbone network requirements for high switching capability, high port density and high reliability. If you need a switched backbone based on OC3 and OC12 ATM switching for concentration of campus LANs, high-speed wide-area ATM connections and native ATM attachment of high-speed servers, the 8265 is an excellent choice.

What makes the 8265 such an outstanding switch? It has the proven robustness, reliability and stability of the technology it shares with the IBM 8260 Nways Multiprotocol Switching Hub and the IBM 8285 Nways ATM Workgroup Switch. It uses proven attributes of current 8260 models—passive components for reliability purposes, female connectors for protection against bad module insertions and dual Control Point Switch (CPSW) module slots for redundancy. It uses IBM's Switch-on-a-Chip architecture to deliver higher switching capacity than the 8260—up to 12.8 Gbps on a 25-Gbps ATM backplane—and it has a richer set of ATM traffic management functions. And the 8265 integrates advanced functions that minimize network complexity and cost of ownership.

Positioning and Benefits

The IBM 8265 ATM Switch and the IBM 8260 Nways Multiprotocol Switching Hub are key components of IBM's strategy for building ATM backbones at the campus or metropolitan area network (MAN) level. Both products offer a wide variety of ATM interfaces as well as the richest set of signaling and PNNI-1 features in the industry. The 8265 provides higher switching capacity than the 8260 as well as an outstanding set of ATM traffic management functions. The 8260 ensures a smooth transition from the shared-media to the switched environment thanks to its LAN media concentration with microsegmentation and full RMON1 and RMON2, LAN switching and ATM backplanes.

The IBM 8210 Multiprotocol Switched Services (MSS) Server offering—as a module in the 8265 chassis or as a stand-alone product—and the 8265 form the cornerstone of IBM's Switched Virtual Networking strategy. Together they deliver best-of-breed switched solutions for ATM backbones through the combination of ATM's raw switching power, PNNI-1 QoS routing and hierarchy, Layer 2 and Layer 3 cut-through switching and the most advanced broadcast control and dynamic protocol filtering in the industry.

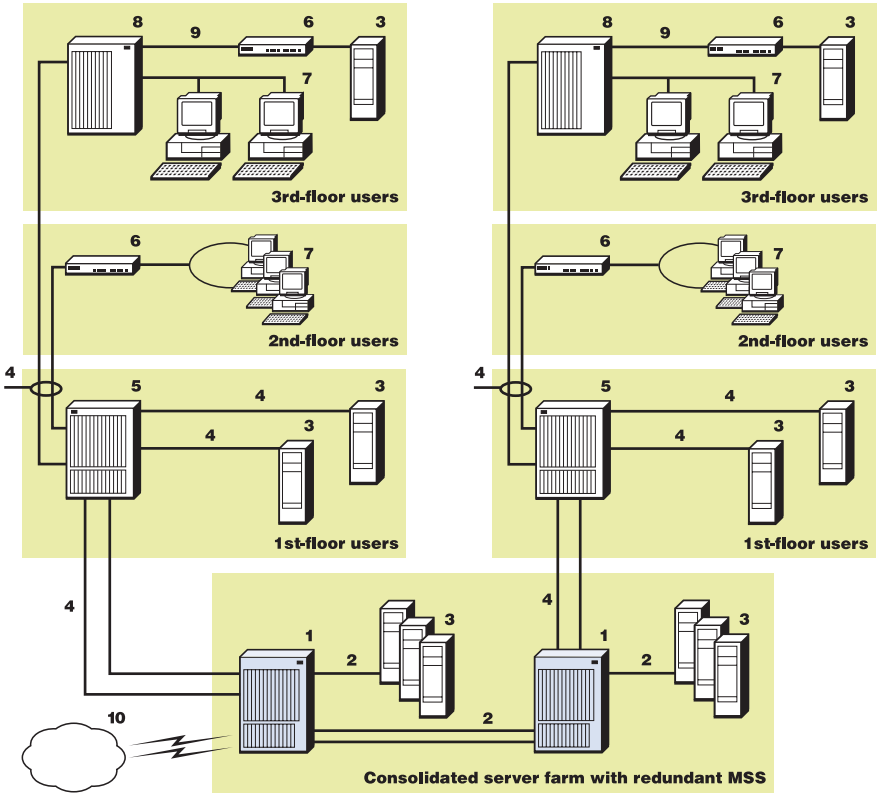
Both the 8265 and MSS will form the foundation of IBM's future plans for IP switching on ATM backbone networks. They will provide both servers and client support based on the Multiprotocol Over ATM (MPOA) standard, which will offer cut-through Layer 3 switching on the ATM network.

There are network management benefits as well. The Nways Campus Manager suite of management applications tightly integrates both ATM and LAN network management through combined network topology and correlation among all network resources.

Here's more evidence that IBM offers you a complete switching solution: All of IBM's LAN edge switches—827x and 8285—offer ATM uplinks and act as feeders from any LAN type into ATM backbones based on the 8265 and MSS. You can continue to use your current entry-level Ethernet switches, such as the IBM 8271 Nways Ethernet LAN Switch and IBM 8277 Nways Ethernet RouteSwitch. Connect Token-Ring LANs to an ATM network with the entry-level IBM 8272 Nways Token-Ring LAN Switch and midrange IBM 8270 Nways LAN Switch. For high-end multiprotocol LAN switching, use the IBM 8274 Nways LAN RouteSwitch. Add 25-Mbps desktop ATM connectivity with the 8285 Nways ATM Workgroup Switch.

Problem: As campus networks evolve, growing demand for bandwidth and switching capacity in the backbone are driven by server consolidation and desktop switching technologies. Backbone ATM switches require increased wire-speed OC3 and OC12 port densities and more aggregate cell switching capacity.

Environment: Increasingly, campus networks are supporting bandwidth-intensive applications like multimedia and Web servers by migrating LAN switches to ATM backbone networks using LAN Emulation and enabling increased server network I/O capacity with ATM-attached servers.



1. *IBM 8265 Nways ATM Switch*
2. *OC12*
3. *Server*
4. *155-Mbps ATM OC3 uplinks*
5. *8260*
6. *8277 Nways Ethernet RouteSwitch (ATM edge switch)*
7. *Workstations*
8. *827x Nways Switch (ATM edge switch)*
9. *100 BASE-FX*
10. *WAN*

Solution: The 8265 Nways ATM switch provides the nonblocking 155-Mbps and 622-Mbps port density and 12.8 Gbps of cell-switching capacity necessary for today's ATM backbone networks. It is also the perfect solution for ATM-attached server farms and concentration of large numbers of LAN switching edge devices with 155-Mbps ATM uplinks.

Benefits/Selling Points

- Reduced cost and time, improved network utilization
- Nonblocking architecture
- Port density, network scalability
- Flexibility, cost reduction
- Increased switching capacity
- Investment protection and migration path

Product Overview

NEBS to Meet Telco Class Standards

Network Equipment-Building System (NEBS) certification from Bell Communications Research (Bellcore) demonstrates device environmental compatibility and acceptability for applications in Telco central office environments.

NEBS certification strengthens the 8265 solution for the following markets:

- Extended WAN ATM campus networks in enterprise accounts
- Multiservice network infrastructure equipment in enterprise and service provider networks
- CPE equipment for enterprise companies using ATM and FR services

Supersonic speed at a competitive price

The 8265 ATM Switch offers up to four times the cell-switching capability of current 8260 models, with a substantial increase in bandwidth available to each module in the modular ATM chassis. And it offers a wide range of ATM connectivity—25 Mbps for business desktops, variable nonblocking backbone uplinks at OC3 or OC12 levels, and wide-area connection speeds of E1, T1, J1, E3, DS3, J3, OC3 and STM-1. With 56 OC3 ports, 14 OC12 ports and WAN interfaces from multiplexing over ATM (IMA), to OC3 speeds, the 8265 is well equipped to handle the transmission speeds your network requires. Not to mention other important ATM interfaces like MSS, MPEG-2 Video Distribution Module, TAXI, Circuit Emulation and LAN/WAN switching modules. And one of the 8265's most winning features is its attractive price. All this bandwidth and connectivity is actually affordable.

Like all IBM ATM products, the 8265 is standards-based. It adheres to ATM Forum standards for PNNI and Interim Inter-Switch Protocol (IISP), as well as Classical IP over ATM (CIP, RFC 1577) and LAN Emulation Client standards. It supports MIB 2, IETF AToM MIB and the ATM Forum PNNI MIB.

Frame Relay/ATM interworking

The Frame Relay/ATM Interworking Card from Odetics-Telecom is ideal if you want to build Frame Relay switched networks that interwork seamlessly with ATM devices. The FRAIM card is an I/O card with six E1/T1 ports that fits on the 8265 ATM Generic Carrier 2.5 Symmetric module (Feature 6559). The card supports both structured and unstructured E1/T1 channels with G.703 physical interface. You can place two FRAIM cards on one IBM 8265 Generic Carrier 2.5 Symmetric module, to provide up to 12 Frame Relay access ports per 8265 slot.

Exceptional traffic management

The 8265 ATM Switch brings you enhanced ATM traffic management capabilities. These essential capabilities are fully distributed on each 8265 module instead of centralized on the switching fabric—a key factor in network availability, scalability and growth.

The 8265 brings you the benefits of distributed buffer pools—improved link utilization and assistance with traffic shaping. The 8265 has one of the most sophisticated ATM Forum-compliant PNNI implementations in the industry as well as a high level of ATM signaling performance and robustness. Here are the 8265's key traffic management functions:

- Support of all ATM QoS
- Setting of priority queues based on ATM QoS
- Regulation of traffic flow through the use of a relative rate for ABR traffic and early- and partial-packet discard for any kind of traffic
- VC policing for congestion control
- Traffic shaping per VP for regulating speed
- Instant viewing of counters per connection, port and module
- Input and output buffer queues on all 8265 modules
- Port mirroring for traffic analysis

Superior Control Point function

The 8265 Control Point provides a complete set of functions to control an ATM campus network and to interconnect local ATM networks over ATM WANs. The Control Point consists of two full-size cards in a double-slot module. A base card, the ATM switch fabric, switches cells from an ATM port on a concentration module to another ATM port (or the same one) or to the ATM CPSW. Switching is done by the switch integrated circuit, which is two chips acting as a single, nonblocking 16x16, 16-bit parallel module, with an aggregate throughput of 12.8 Gbps and support of OC12 rates at media speed. The single-stage switching architecture minimizes cell delay variation—a must for delay-sensitive video and voice transport.

A Control Point card houses a high-speed PowerPC processor and uses the same Control Point software used by current 8260 ATM models—the software that has made possible the deployment of large, complex ATM networks. For loading Control Point code and future extensions and enhancements, a PCMCIA card is incorporated. A download kit program gives all necessary features to upgrade Control Point microcode. You can even download code updates from the World Wide Web. The Control Point card provides a complete set of functions to control ATM campus networks and to interconnect local ATM networks over ATM WANs. It can manage 40 000 unidirectional virtual circuits—8000 per 8265 module.

The original CPSW, FC 6501 and the enhanced CPSW, FC 6502 are both offered. The Feature 6501 will continue to be compatible with 8260 modules that need dedicated 8260 slots in the 8265 chassis (slots 1, 3, 5, 7). The Feature 6502 will support only native 8265 modules. All modules announced since June 98 are native 8265 modules. The newer, enhanced Control Point Switch module, Feature 6502, includes a faster processor and increases available Control Point memory from 32 MB to 64 MB.

Two versions of the Control Point microcode are available: a base version that includes IISP support and a PNNI version. The PNNI-1 implementation offers more flexibility in the way ATM switches optimize link utilization: Network managers can let the network automatically handle the selection of the least-loaded route or they can set administrative weights on the ATM links to favor some lines over others. PNNI-1 also improves LAN Emulation network reliability and simplifies its setup.

With Control Point Version 4, the 8265 Control Point supports the PNNI full hierarchy. This evolution of ATM technology enables the building of ATM networks with virtually unlimited scalability, for transmission infrastructure, positioning ATM as the ideal technology for IP-based backbone networks in the public Internet and Enterprise Internet infrastructures.

New 8265 modules

Several new modules are available for the 8265 ATM Switch's 17-slot passive backplane. For OC3 speed there are two versions of a 4-port, nonblocking 155-Mbps switch module. To optimize multiple cabling configurations on a per-port basis, use the 4-Port OC3 Flexible Module. This module holds up to four multimode fiber (MMF), single-mode fiber (SMF) or copper I/O feature daughter cards in any mixed configuration. For MMF configurations where lower price per port is a consideration, choose the 4-Port OC3 MMF Module, which provides a fixed configuration of four MMF OC3 ports.

The 8265 is an ideal backbone switch, with full wire speed on up to 14 OC12 ports. In large ATM backbone networks, where ATM switches concentrate a growing number of 155-Mbps links, connections between switches have to meet high traffic requirements. The 1-Port OC12 Module, available for either MMF or SMF, with its nonblocking OC12 connection, offers a solution for this configuration problem.

A chassis built for high availability

The new 8265 ATM Switch chassis is designed with high availability in mind. It features a 17-slot, 25-Gbps ATM backplane with no active components for increased reliability and dual Control Point/Switch slots for redundancy.

Load-sharing power supplies evenly distribute power consumption so there's no single point of failure in the power subsystem. Power supplies are easily accessible from the front of the switch—a time-saver when you need to install new ones. And they're hot-swappable so you don't have to power off the switch to install them. Just plug in the new power supply—it automatically assumes its share of the power load. Running in fault-tolerant mode with full power capacity (four power supplies), up to 1100 watts of power are delivered to installed modules. In non-fault-tolerant mode up to 1500 watts of power are delivered.

The 8265 Controller module performs the following functions:

- Clock generation and distribution across the backplanes
- Monitoring of installed power supplies
- Intelligent power management
- Environmental control, including monitoring fan-tray operations and temperature sensing
- Inventory management

These hot-swappable, field-replaceable modules have their own slots, so all 17 slots in the chassis remain available for ATM modules. You can either use Feature 6501 or 6502 when you activate the Controller Module to act as backup in case of failure.

The Controller module works with the Control Point Switch module to manage power usage in the switch and allow you to prioritize how modules will power off if insufficient power is available to run all modules. Each new module is polled to confirm so that its power requirement can be fully satisfied. A fault-tolerant power function allows the 8265 to reserve some power capacity to protect against power-supply failure. And the intelligent cooling subsystem protects the switch, any installed modules and configuration information from damage or loss that could result from a heat-related failure of the switch or an individual module.

A chassis with Feature 6502 enhanced Control Point Switch module does not require a controller module to operate. The CPSW handles the power control and is also operational if a controller module is plugged into the chassis. In this case, you can choose whether the CPSW or the controller module handles the power control, by using the red switch located on the bottom left of the CP circuit board. When the switch is OFF, the integrated power control (IPCTL) is active, and when the switch is ON (Force RCTL), the controller module is active. This function allows you to benefit from the controller module redundancy with the 6502 CPSW, but there is no possible power control redundancy between a 6502 CPSW and a controller module.

Feature	*Benefit*
Advanced traffic management functions	Reduced cost and time, improved network utilization
Wide range of ATM connectivity options	Flexibility, cost reduction
Superior ATM Control Point	Increased switching capacity
High port capacities	Reduced cost
High-availability features	Improved network availability
Shared technology with 8260 and 8265	Investment protection, proven performance
Same network management as 8260 and 8285	Reduced cost and retraining effort
NEBS-certified power supply	Telco-class standards
New Control Point Switch 2 Module	More processing power, more networking capacity, superior reliability and serviceability to manage the new generation of modules starting with Release 4.0
Inverse Multiplexing over ATM I/O Card (IMA)	Enhanced WAN connectivity
ESCON Channel Attachment Card	Smooth migration, minimum bandwidth, direct communication

Investment protection for 8260 ATM networks

We want to help you protect your investment in IBM ATM products. That's why the 8265 ATM Switch offers a convenient migration path and new levels of scalability for 8260 ATM networks. The 8265 backplane has room for up to four 8260 ATM modules, with the ability to mix 1-, 2- and 3-slot blades. And its backward-compatibility mode, when used with Control Point Switch module Feature Code 6501, allows use of almost all 8260 ATM modules, including:

- MSS
- 8271 Ethernet LAN Switch modules
- 8272 Token-Ring LAN Switch modules
- MPEG-2 Video Distribution Module
- Circuit-emulation module (PBX attachment) from Fibercom
- WAN ATM modules (E1, T1, J1, E3, DS3, J3, OC3 and STM-1)
- 25-Mbps and 155-Mbps modules
- ESCON Channel Attachment Card from Bus-Tech, Inc.
- Frame Relay/ATM Interworking Card from Odetics Telecom
- Modules developed under the ATMKit Development program

And we've designed the 8265 so that it easily combines with 8260 ATM switches and 8285 ATM workgroup switches in the same network. All three switches share a common Control Point Software platform that provides standard protocols, advanced features, command interfaces and network management tools and procedures—no need for retraining.

8265 Nways ATM Switch Specifications

4-Port OC3 Flexible Module

Part number	13J8738
Feature code	6543
Slots	4 to host OC3 I/O cards
Physical interface	Optical MMF, optical SMF, copper (STP/UTP)
Per-port speed	155 Mbps nonblocking
Distance	• With MMF I/O cards: Up to 2 km (1.24 mi) • With SMF I/O cards: Up to 20 km (12.4 mi) • 40 km (24.8 mi) RQQ available • With copper I/O cards: 100 m (328 ft) using 100-ohm UTP 5 or 150-ohm STP cables
Maximum number of modules per chassis	16
Maximum number of ports per chassis	56
Buffer size	10 KB
Maximum number of connections	8000
Management	Hot-pluggable module

4-Port OC3 MMF Module

Part number	02L2414
Feature code	6540
Ports	4
Connector type	SC
Physical interface	Optical MMF
Per-port speed	155 Mbps nonblocking
Distance	Up to 2 km (1.24 mi)
Maximum number of modules per chassis	14
Maximum number of ports per chassis	56
Buffer size	10 KB
Maximum number of connections	8000
Management	Hot-pluggable module

1-Port OC12 Concentration

	Module MMF	Module SMF
Part numbers	02L2412	02L2413
Feature codes	6511	6512
Ports	1	1
Connector type	SC	SC
Physical interface	MMF	SMF
Per-port speed	622 Mbps nonblocking	622 Mbps nonblocking
Distance	500 m (1640 ft)	15 km (9.3 mi)
Maximum number of modules per chassis	14	14
Maximum number of ports per chassis	14	14
Buffer size	10 KB	10 KB
Maximum number of connections	8000	8000
Management	Hot-pluggable module	Hot-pluggable module

IBM 8265 Nways ATM Switch	
Part number	13J8690
Switch characteristics	• Switch-on-a-Chip architecture • Up to 12.8-Gbps full-duplex aggregate throughput • All ATM QoS including ABR with committed minimum cell rate and explicit rate • Hot-swappable switch modules, which eliminate powering off the 8265 to add new or change failed modules
Chassis	• 17 slots • 25-Gbps ATM backplane • Backward-compatibility mode allowing use of current 8260 ATM modules when used with Control Point Switch Feature Code 6501 • Supports hot-swappable modules • Three fan units already installed • Cable management tray to guide cables • 14 blank, single-slot filler plates • One rubber feet kit for mounting the 8265 on a table • DEC cable and interposer to connect a local console • Rack-mount kit for installing the chassis in a rack • Intelligent power management
Open platform	• Accepts other companies' ATM technology and applications through the ATMKit Development Program • Works with UTOPIA, a development interface standard
Slots and capacity	• 17 slots (up to four 8260 ATM modules, with the ability to mix 1-, 2- and 3-slot blades) • Up to: - 56 OC3 ports (nonblocking) - 14 OC12 ports (nonblocking) - WAN interfaces from T1/E1 to OC3 speeds
Physical specifications	Width: 445 mm (17.5 in.) Depth: 385 mm (15 in.) Height: 673 mm (26.5 in.) *Weight: 21.9 kg (48.3 lb)
**For an unloaded machine with blank cover plates, 1 controller module and 1 power supply. Fully loaded, approximately 57 kg (126 lb). Safety regulations stipulate that the table or rack on which the IBM 8265 rests must be able to support a minimum of 170 kg (375 lb). The IBM 8265 chassis occupies approximately 15 U (1 U = 1.75 in.) or 26 SU (1 SU = 25 mm) of rack space.*	
Operating environment	Temperature: 0° to 40° C (32° to 104° F) Relative humidity: 8% to 85% noncondensing Maximum wet-bulb temperature: (need information) Calorific value per power supply: 357 kcal/hr (1416 BTU/hr) Electrical power: 2 kVA Power noise level: 6.6 Bels Leakage and starting current: 21 mA and 30 mA
Power supply	415-watt hot-swappable power supply (up to 4) DC 295-watt (48 V) hot-swappable power supply (up to 4)8265 Modules at a glance

IBM 8265 Nways ATM Switch (continued)

8265 Related Features	Part number	Feature code
8265 Control Point Switch module	13J8704	6501
Memory upgrade for Control Point Switch module (FC 6501)	13J8698	6516
8265 Control Point Switch module-enhanced	02L4061	6502
PCMCIA IISP Card for Control Point Switch module V 4.0	25L4661	6545
PCMCIA PNNI Card for Control Point Switch module V 4.0	25L4662	6546*
4-Port OC3 Flexible Module	13J8738	6543
1-Port ATM Flexible MMF I/O Card for 155 Mbps (SC)	02L2416	6580
1-Port ATM Flexible SMF I/O Card for 155 Mbps (SC)	02L2418	6581
1-Port ATM 155-Mbps UTP5/STP I/O Card (RJ-45)	02L2420	6582
4-Port OC3 MMF Module	02L2414	6540
1-Port OC12 MMF Module	02L2412	6511
1-Port OC12 SMF Module	02L2413	6512
8265 Controller Module	13J8788	8000
415-watt Power Supply	13J8706	8027
295-watt Power Supply	25L4653	8028
ATM Generic Carrier 2.0 MO	02L3559	6558
ATM Generic Symmetric Carrier 2.5	25L4656	6559
ATM Generic Asymmetric Carrier 2.5	02L3560	6560
ATM WAN 2.5 Module	02L3561	6561
1-Port E3 I/O Card (France, Spain)	13J8715	8501
1-Port E3 I/O Card (Switzerland)	13J8764	8501
1-Port E3 I/O Card (U.K.)	13J8766	8501
1-Port E3 I/O Card (New Zealand)	13J8767	8501
1-Port E3 I/O Card (Australia)	13J8768	8501
1-Port E3 I/O Card (Italy)	13J8769	8501
1-Port E3 I/O Card (Germany)	13J8770	8501
1-Port E3 I/O Card (Belgium)	13J8771	8501
1-Port E3 I/O Card (Netherlands)	13J8772	8501
1-Port E3 I/O Card (Israel)	13J8773	8501
4-Port E1/T1/J1 I/O Card (U.S., Canada)	13J8728	8507
4-Port E1/T1/J1 I/O Card (CE Mark countries)	03K5473	8507
4-Port E1/T1/J1 I/O Card (Switzerland)	03K5475	8507
4-Port E1/T1/J1 I/O Card (U.K.)	03K5474	8507
1-Port DS3 (T3) Card	13J8716	8502
1-Port OC3 SMF Card	13J8717	8503
1-Port OC3 MMF Card	13J8718	8504
1-Port STM-1 SMF Card	13J8719	8505
1-Port STM-1 MMF Card	13J8720	8506
4-port IMA I/O Card for ATM WAN 2.5 module (for CE Mark countries and the U.K.)	02L4385	6671
4-port IMA I/O Card for ATM WAN 2.5 module (for U.S and Canada)	02L3557	6670
MSS 2.5 Module	26L0105	5401
MSS Microcode V 2.0	08L2650	8708
MSS Flash Card	08L2762	8711
MSS Data/Fax Mode	Country-specific	Country-specific
Accessories		
Rack-Mount Kit for 8265-17S	13J8750	8015
Cable Management Tray	13J8751	3792
Documentation		
8265 CD-ROM documentation	02L4409	6509

**Requires 16-Mb Memory Upgrade for 8265 Control Point Switch module (FC 6501)*

IBM 8265 Nways ATM Control Point Switch module (continued)	
Management	For management from an SNMP management station, the 8265 MIB should be installed. Nways Campus Manager for AIX® (LAN, ATM, Suite), 5697-208. Nways Manager for Windows, 5622-839, part number 31H6996. Nways Campus Manager LAN for HP, 5697-B11. Nways Campus Manager ATM for HP, 5697-B12. IHMP/DOS Entry V 2, 5697-163, part number 80G4102.
Security and passwords	Data security: External access for configuration and service is controlled through password authorization.
Warranty	One year
Switching functions	Single-stage, 16x16, 16-bit parallel switch with 12.8-Gbps throughput CBR, VBR, UBR and ABR Priority queuing set via QoS Traffic management Input and output cell-buffering Early-packet and partial-packet discarding Switch simplification No gear boxes Prizma prime based
Control Point functions	*Note: All control, management and box services described below come with the PCMCIA IISP Base Code Card Feature Code 6545, with the exception of PNNI-1. The PCMCIA PNNI-1 Code Feature 6546 comes with all Control Point functions of the PCMCIA IISP base code card plus PNNI-1 protocol capability.* • Both SVCs and PVCs. • UNI. • Support of ATM signaling (SVC point-to-point and point-to-multipoint) according to ATM Forum V3.0, V3.1 and V4.0. • Support of E. 164 public ATM addresses. • Support of permanent connections (PVC point-to-point and point-to-multipoint). PVC setting is supported according to the PNNI-1 specifications for soft PVCs. • Support of interworking between V3.0 and V3.1 end systems. • UNI without ILMI registration, for connecting devices without ILMI support to the ATM network through the 8265 switch. • IISP. • Support of IISP according to ATM Forum specifications. • Support of link backup and load balancing between independent peer groups. • Automatic call rerouting at peer-group boundary through crankback. • PNNI-1 Optional feature 6546. • Support of Private NNI (PNNI Phase 1) with the PNNI full hierarchy according to ATM Forum specifications. • Path selection. Depending on network constraints, connection types and network operator requirements, either precomputed paths or on-demand paths, widest paths or shortest paths can be selected. • Pub-UNI: Support of connectivity to public network (without supporting its signaling). • VP assignment per QoS, which allows traffic of different QoS to be split over different VPs sharing the same ATM physical interface—a key consideration when connecting to a WAN ATM carrier service or to a WAN ATM switch such as the IBM 2220 Nways BroadBand Switch. •VP tunneling: Supports interconnection of ATM campus switches over an ATM WAN providing PVPs (signaling channel is passed transparently to the WAN). • Support of VP multiplexer. • Support of multiple VPs of different types (UNI, IISP, PNNI) on the same physical interface. • Integrated LAN Emulation Server-Broadcast Unknown Address Server (LES-BUS) for small LAN emulation environments.

IBM 8265 Nways ATM Control Point Switch module (continued)

Control Point functions continued	• Link redundancy. • Supported on physical and VP tunnel interfaces—UNI, IISP or PNNI. • Link selection can be based on either a load-balancing algorithm if all parallel links share the same administrative weight or the lowest administrative weight. • Automatic call-setup rerouting on the next-best-fit link in case of failure on the selected link. • Link-sharing control: allows the network administrator to limit the proportion of links bandwidth or VP tunnel that can be reserved by reserved bandwidth connections (CBR, real-time; VBR, non-real-time; VBR; minimum cell rate of ABR). This is supported on any interface: UNI, IISP or PNNI. • Network access control security: Access to the 8265 ATM network is provided for all types of ATM applications. When an ATM station connects to the 8265 it must register its address through ILMI. The network administrator can specify which ATM stations are allowed access. • Direct control of the IMA links and immediate notification and PNNI topology update if there are changes in IMA characteristics. • Switch access • Support of Classical IP over ATM (CIP, RFC 1577) for switch management and services. • Support of LAN Emulation Client (LEC) for both Ethernet and Token-Ring for switch manage ment and services. • Coexsistence of CP/SW and Controller module to handle power control.
Network management	• Access control; provides ATM access control, allowing network managers to prevent unauthorized users from accessing the network. • Network management • Chassis monitoring, a new feature that allows network administrators to monitor 8265 environment parameters (power supplies, inventory, temperature) from the ATM Control Point and Switch module. Gives you local access to all environment parameters via the local console port, or remote access via Telnet, and triggers SNMP traps upon major events such as power-supply failure and temperature threshold exceeded. • Counters per VC, port and module. • ILMI support (3.0, 3.1) for Plug and Play operations on both physical and VP links on all interfaces (UNI, IISP and PNNI). • SNMP support (Get, GetNext, Set and Traps). • MIB 2 support. • IETF AToM MIB. • ATM Forum PNNI MIB.
Box services	• Command line interface • Local console • Remote access via Telnet either in-band (IP over ATM, IP over LAN Emulation) or out-of-band • RJ-45 auxiliary port to connect an Ethernet management station • Code update via TFTP (in-band and out-of-band)—dual code images in case of download failures • Serial port to connect local console for local service operations • Microcode download using TFTP • Field-programmable gate array (FPGA) download using TFTP • Error log, traces and dumps uploaded for debugging • Telnet and PING operations • Troubleshooting support • Port mirroring • Trace services • Dump services • Error logging in nonvolatile storage • Transfer of trace, dump and error log using TFTP (in-band or out-of-band) • Configuration services • Manage configuration parameters in nonvolatile storage • Upload/download of configuration via TFTP (in-band or out-of-band) • Box survey: module monitoring and failure handling

IBM 8265 Nways ATM Control Point Switch module (continued)

Box services continued

- Switch redundancy
- Automatic configuration synchronization
- Monitoring and automatic takeover in case of active switch failure
- Enhanced serviceability
- ATM ping
- WEB server for browser-based user interface
- Java applets for display of PNNI topology and trace/dump utility interface
- Enhanced debuggability
- Selective tracing per VPC
- 2-level tracing for SS and Signaling
- Signaling trace cleanup

8260 ATM Modules

Description	Part number	Feature code
12-Port 25-Mbps Concentration Module (RJ-45)	13J8713	5012
1-Slot UTOPIA 1 ATM Carrier Module	13J8730	5102
4-Port 100-Mbps SC Module	13J8722	5104
ATM WAN 2 Module	13J8734	5602
8260 MSS Server module	08L2763	5400
8272 ATM/LAN Switch Module (2-slot)	13J8725	5208
8272 ATM/LAN Switch Module (3-slot)	1J8726	5308
8271 ATM/LAN Switch Module (2-slot)	13J8723	5212
8271 ATM/LAN Switch Module (3-slot)	13J8724	5312
Video Distribution Module	37H7725	5008

IBM 8265 Nways ATM Control Point Switch Module at a glance

Part number	13J8704	02L4061
Microprocessor	PowerPC	PowerPC
RAM	16 MB (IISP base code); extension to 32 MB	64 MB
Connections	16 000 SVCs (32 000 unidirectional VCs) 256 Permanent Virtual Paths (PVPs) Up to 1000 point-to-multipoint connections Up to 8 000 add parties 512 soft PVCs initiated from this switch Up to 64 reachable ATM addresses 64 virtual path connections	20 000 SVCs (40 000 unidirectional VCs) 2500 (PVPs) Up to 1000 point-to-multipoint connections Up to 8 000 add parties 2500 soft PVCs initiated from this switch Up to 64 reachable ATM addresses 512 virtual path connections

Installation information

Software

Operating systems

No mandatory software is required to operate the 8265 ATM Switch. However, it is recommended that you install the following software:

- The last microcode versions for the Control Point Switch module
- The last controller code update.

Hardware requirements

An ASCII terminal (IBM 3151 with VT100 Emulation or equivalent) is required for initial configura tion but is not needed thereafter. A PC with VT100 Emulation can also be used. A TCP/IP terminal available in the LAN can also be used.

Supplementary Information

The following sales tools are available for the IBM 8265:

- Specification sheet:
  IBM 8265 Nways ATM Switch, G224-4543-00
- Information on the IBM 8265 is available at:
  www.networking.ibm.com/netprod.html
  www.networking.ibm.com/8265/8265prod.html