High-powered, scalable ATM switch

IBM 2230 Nways ATM Switch Models 600 and 650

Highlights

- ***High-performance, high-function, multiservice ATM switching***
- ***Sophisticated, network-wide topology management for guaranteed quality of service***
- ***Modular design for economical scaling***
- ***High single-platform port density***
- ***High-bandwidth OC12c/STM4 support***
- ***Multiprocessor and custom-silicon design for optimal performance***
- ***Advanced traffic management***
- ***Quad-Plane architecture for maximum data integrity***
- ***Non-blocking switch scalable to 5 Gbps***
- ***Up to 96 000 cells data buffering per I/O module***
- ***Up to 16 000 virtual circuits per I/O module***

High-performance access to the high-speed WAN

The IBM 2230 Nways™ ATM Switch Models 600 and 650 are high-performance cell switches based on crosspoint technology as their core switch fabric. They deliver on the vision of ATM with the most advanced ATM functions and innovative value-added features, which provide complete, integrated user access to the full promise of ATM WAN technology. Highly scalable and reliable, the 2230 ensures that the service provider and enterprise manager will be able to migrate their existing networks to native ATM technology.

Architecture

- 16-slot modular platform
- 2 slots dedicated to an ATM Switch Module and an optional, redundant switch; 14 slots available for high-density I/O modules
- 8-port T3/E3, 8-port T1/E1, 4-port OC3c/STM1 I/O modules and single-port OC12c/STM4 I/O modules
- Fully redundant switch fabric, fans and power supplies
- Hot-swappable components for maximum network availability
- Symmetrical RISC multiprocessing with RISC CPUs on every I/O and switch module, combined with dedicated silicon for high overall performance and rich value-added features
- Scalable to 5-Gbps, non-blocking switching capacity
- 112 DS3/E3/T1/E1, 56 OC3c/STM1, and 14 OC12c/STM4 in one platform
- Seamless integration to build multiservice networks
- Optional available bit rate/ unspecified bit rate (ABR/UBR) Flow Control Processor Module
- Fully integrated with 2225 Nways Multiservice Switch: same network architecture, routing and network management

ATM Switch Processor

The ATM Switch Processor incorporates:

- Silicon-based Quad-Plane crosspoint matrix switching fabric
- RISC microprocessor subsystem for platform-wide system coordination, participation in distributed management, routing, signaling and traffic management
- PCMCIA-based peripheral connections for local hard disk, modem and Ethernet connections for management

Switch fabric

Models with non-blocking switch fabric scalable to 5 Gbps include:

- Model 600: a 4x4 matrix that runs at 640 Mbps for a capacity of 2.5 Gbps, non-blocking; 64 000 cell buffers in switch fabric.

- Model 650: output-buffered, self-routing 8x8 matrix, individual ports run at 640 Mbps for a total capacity of 5 Gbps, non-blocking; 128 000 cell buffers in switch fabric
- Each port contains buffering, creating 10 distinct Quality-of-Service queues (in service priority order):
  - One queue for constant bit rate (CBR) traffic such as voice and time division multiplexing (TDM)
  - Four queues for real-time, variable bit rate (VBR) traffic such as interactive video
  - Four queues for non-real-time VBR traffic such as broadcast video
  - One queue for ABR/UBR traffic such as IP and LAN Interconnect

RISC Control Processor

- Provides system-wide configuration and network coordination for management, routing, traffic management and other tasks.
- Clock source is software-selectable from three options: internal, recovered from ATM trunks or external.

Industry-standard PCMCIA peripheral port support

The 2230 Nways ATM Switch supports an industry-standard PCMCIA interface to support the following interfaces:

- Ethernet: used for network management and control.
- Hard disk: contains software images for the ATM Switch Processor and I/O modules, configuration parameters, diagnostic information such as traces, and local storage of usage-based billing data.
- Modem: a dial-in alternative used for out-of-band remote network management and operations functions.

I/O modules

Offering high port density and performance for price, the 2230 ATM Switch supports 8-port DS3/E3 and 4-port OC3c/STM1 modules. A midplane architecture is used to attach I/O modules to the physical port connector panels.

I/O modules offer:

- Wire-speed data throughput
- Large data buffering with 8000-cell buffer per DS3/E3 port and 96 000-cell buffer per OC3c/STM1 port
- 16 000 circuits supported per I/O module. These include permanent virtual circuits (PVCs), switched virtual circuits (SVCs) and permanent virtual paths (PVPs).
- 16 000 point-to-multipoint connections per switch
- Dedicated RISC processor on each I/O module
- Distributed SVC signaling based on Q.2931 for very high connection setup and re-route rate
- Distributed OSPF standards-based routing algorithm
- Distributed Connection Admission Control processing

Network management application

Network management is implemented using the SNMP protocol. Configuration management, fault management and performance monitoring are provided by Nways Wide Area Element Manager for HP OpenView/Solaris.

IBM 2230 Nways ATM Switch Models 600 and 650 at a glance

Interface specifications	Supports 8-port DS3/E3 ATM User-to-Network Interface (UNI) module, 4-port OC3c/STM-1 ATM UNI module, 8-port T1/E1, and single- port OC12/STM-4 module.
Individual interface configurations	UNI 3.0, UNI 3.1; trunk; Private Network Node Interface (PNNI) Phase 0; PNNI Phase I; B-ICI
Ethernet interface management only	
DS3 (44.735 Mbps) with Physical Layer Convergence Protocol (PLCP) or Header Error Control (HEC) cell delineator	
E3 (34.368 Mbps) with PLCP or HEC cell delineator	
SONET/SDH single-mode/multimode fiber, coax and OC3c/STM1 (155.52 Mbps)	
T1 (1.544 Mbps) with HEC cell delineator E1 (2.048 Mbps) with HEC cell delineator SONET SMF OC12/STM4	
ATM MIB support specifications	
Physical specifications	Width: 483 mm (19 in.) Depth: 381 mm (15 in.) Height: 845 mm (33.27 in.) Weight: 86 kg (190 lb) fully configured
Rack-mounting options	EIA 19-inch or 23-inch mid-mount, central options office style
Power requirements	AC power: auto-ranging 100 to 240 V ac DC power: auto-ranging -39 to -79 V dc Amps: 12 amps at 120 V ac or 20 amps at -48 V dc
Thermal dissipation	Maximum: 1400 watts
Operating environment	Operating temperature: 0°–49°C (32°–120°F) Relative humidity: 10%–80% (non-condensing)

For more information

To find out more about the IBM 2230 Nways ATM Switch and other high-performance IBM communications and networking products, contact your IBM representative or call IBM Direct at 1 800 IBM-CALL (1 800 426-2255). You can also access the IBM Networking Home Page at http://www.networking.ibm.com.

Copies of this and other related product specification sheets can be obtained from the IBM FAX Information Service by dialing 1 800 IBM-4-FAX (1 800 426-4329) in the U.S. or Canada or by dialing (415) 855-4329 outside the U.S. and Canada and requesting any of the following document numbers:

- 4491: IBM 2219 Nways Frame Relay Switch Model 250
- 4492: IBM 2230 Nways ATM Switch Models 600 and 650
- 4493: IBM 2225 Nways Multiservice Switch Models 400 and 450



© International Business Machines Corporation 1996

Department TYCA
PO Box 12195
RTP NC 27709
USA

Produced in the United States of America
3-97

All Rights Reserved

References in this publication to IBM products or services do not imply that IBM intends to make them available in all countries in which IBM operates.

Copying or downloading the images contained in this document is expressly prohibited without the written consent of IBM.

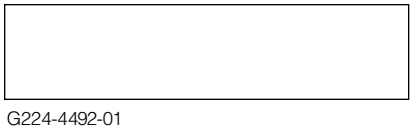
® IBM is a registered trademark of International Business Machines Corporation.

™ Nways is a trademark of International Business Machines Corporation.

All other company names or products are trademarks or registered trademarks of their respective companies.



Printed on recycled paper



G224-4492-01