CBX 500® Multiservice WAN Switch

Increase edge capacity and add services for ATM, Frame Relay and IP/MPLS; aggregate high volume access traffic for cost-effective transport.



Benefits

- Increase revenue potential by extending ATM and Frame Relay (FR) services, and adding IP services through cost-effective multiservice capabilities
- Differentiate services with QoS, and preserve SLAs
- Simplify network management and reduce operating costs with Navis™ network management software

Lucent Technologies
Bell Labs Innovations

Scalable, Profitable Multiservice Edge Access

The CBX 500® Multiservice WAN Switch supports ATM, FR and IP/MPLS. With industry-leading port densities and service interfaces, the CBX 500® switch equips you to deliver highly scalable and cost-effective ATM, FR, and IP services for large market deployments. The CBX 500® switch design incorporates a wide range of software and hardware fault tolerance features that maintain service continuity. The CBX 500® switch's quad-plane, redundant switching architecture allows you to provide ATM-level QoS to any service as well as the bandwidth guarantees your customers require—helping you meet service level agreements.

High Port Density with Multiservice Provisioning

With its wide range of Input/Output (I/O) modules and a distributed I/O module-based processing design, the CBX 500® switch offers high port and service densities from a compact chassis. When equipped with two switch processor modules, the CBX 500® switch provides 5 Gbps full-duplex multiservice switching for ATM, FR and IP/MPLS user data.

You can offer high-density ATM access and cost-effective, reliable ATM trunking at speeds up to OC-12c/STM-16 simply by equipping the CBX 500® switch with ATM I/O modules. A diverse set of ATM I/O modules provides ATM Forum standard traffic management and flow control services.

Similarly, you can add high-density, scalable FR and IP/MPLS access to your service portfolio by equipping the CBX 500® switch with FR/IP MPLS I/O modules. The highly scalable set of FR/IP MPLS I/O modules provides standards-based FR to ATM service and network interworking services.

Superior Availability and Fault Tolerance

The CBX 500® switch offers proven, carrier-class reliability and availability with a wide range of software and hardware fault tolerance features that enable you to offer service continuity through almost any service-affecting event. These features include:

- Fully redundant switch fabric, node processors, timing module, fan units, and power supplies
- Automatic failover to a standby switch processor module to continue services without losing data
- Automatic Protection Switching (APS) support on the OC-12c/STM-4 and OC-3c/STM-1 I/O modules for millisecond recovery on transmission facility failures
- Resilient local management interface (LMI) User Network Interface/Network Node Interface (UNI/NNI) support on all FR/IP MPLS I/O modules to provide disaster recovery on FR networks
- Hot swap and live insertion capabilities on all I/O and switch processor modules to help reduce network downtime
- Flash memory to simplify field installations of new software
- In-service software upgrades to minimize service disruptions to user traffic
- Priority-based routing of hundreds of thousands of circuits per second to help minimize service disruptions
- Distributed routing and signaling control to help avoid single points of failure

- Stratum 3 holdover timing to help continue services even if the timing source is lost

In addition, the CBX 500® switch provides a rich set of line and circuit statistics to help you prove to your business customers that your network has met the availability requirements in your service level agreements.

Robust QoS for All Services

The CBX 500® switch's quad-plane, redundant switch fabric and output-buffering scheme provide the varying QoS and bandwidth guarantees essential to multiservice switching. The distributed connection admission control algorithm provides QoS-aware admission to the network, with automatic output queue scheduling as connections are established in the network.

Quad-Plane Architecture Ensures QoS

CBX 500® Multiservice WAN Switch—Key Features

- **Multiservice Traffic Support**—The flexibility to change your service mix to meet demand
- **Proven Carrier-Class Reliability, Availability, and Fault Tolerance**—Switch fabric and module redundancy, Automatic Protection Switching (APS), and automatic failover that help provide service continuity
- **Multiservice Provisioning**—To deliver high-speed ATM trunking and high-density ATM, FR, and IP MPLS services from one CBX 500® switch
- **Scalability**—High port densities, high virtual circuit support, and distributed routing and signaling that increase service capacity

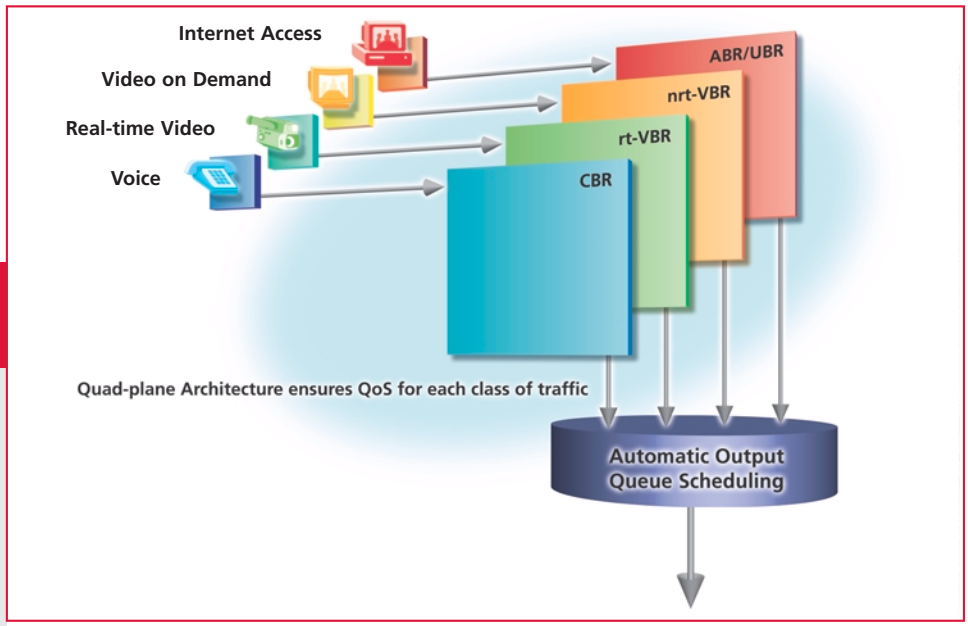
Carrier-Class Multiservice Switch Operating Software (MXOS™) Helps Increase Profitability

MXOS™ software supports ATM, FR and IP services on the CBX 500® and GX 550™ multiservice WAN switches and the TMX 880™ MPLS core switch. MXOS™ enables delivery of multiple services from a single network infrastructure, allowing service providers to maintain existing profitable data services and avoid the need for costly overlay IP networks. MXOS™ incorporates service-aware routing, based on the Lucent Virtual Network Navigator™ (VNN) architecture which ensures network-wide ATM-level QoS for all services by dynamically finding a path through the network to guarantee a connection's QoS even in the event of a network failure. MXOS™ leverages Lucent's experience in building the most reliable voice networks and includes reliability features, such as improved fault management and improved manual and automatic service recovery, that have been adapted to bring greater reliability to data switching networks. MXOS™ helps reduce operations costs with proactive tools for network data collection and analysis, which quickly identify potential problems and prevent service disruptions.

Simplify Network Management and Reduce Operating Costs with Navis Software

Lucent's Navis™ network and service management software enables you to deliver new services to your business customers quickly and profitably. Sophisticated applications deliver add-on functions such as service level agreement and real time statistics monitoring. Exceptional management of Lucent networking nodes, using industry-standard protocols, builds seamless network management across Lucent core switching products for all network services. Navis™ software delivers:

- Multiservice management from a single platform
- Extensive configuration, performance management, and security support
- Point-and-click provisioning
- Faster and easier service delivery, moves, adds, and changes



CBX 500® switch supports diverse traffic types with ATM-level QoS for voice, video, and data.

Summary of Technical Specifications

CBX 500® Multiservice WAN Switch

Description	Specifications
1. Protocols Supported	
ATM/FR:	UNI 3.0/3.1/4.0, TM 4.0, IISP, PNNI, B-ICI, FR UNI (DTE and DCE), FR NNI, FRF.5 and FRF.8 ATM to FR interworking
IP/MPLS:	BGP-4, OSPF, RIP, Static, MOSPF, DVMRP, IGMP, PPP
Ethernet:	10/100 Mbps
2. Physical Interface Cards	
ATM Input/Output Modules:	
a. 1-port OC-12c/STM-4	Up to 14 OC-12c/STM-4 ports, with 8 ports at full bandwidth capacity
b. 4-port OC-3c/STM-1	Up to 56 OC-3c/STM-1 ports, with 28 ports at full bandwidth capacity
c. 8-port DS1/E1	Up to 112 ports per chassis
d. 8-port DS3/E3	Up to 112 ports per chassis
e. 3-port Channelized DS3/1 with IMA	1,176 ATM with IMA DS1 ports
FR/IP MPLS Input/Output Modules:	
a. 6-port DS3	Up to 84 DS3 ports per chassis
b. 4-port 10/100 Mbps Ethernet Processor	Up to 56 ports per chassis
c. 4-port Channelized DS3/1/0	Up to 14,436 DS0 ports per chassis
d. 4-port Channelized DS3/1	Up to 1,568 DS1 ports per chassis
e. 8-port DS3 Subrate	Up to 112 DS3/subrate ports per chassis
f. 32-port Channelized T1/E1	Up to 1,568 DS1 ports per chassis
g. 1-port Channelized STM-1/E1 with IMA	Up to 14 STM-1 ports per chassis

3. System Architecture

- 5 Gbps full duplex switch fabric
- Hot-swappable components
- Lossless switchover to redundant switch fabric
- Distributed routing and signaling
- Redundant processors, modules, fans, timing, and power
- Quad-plane architecture
- Priority-based circuit routing
- External, internal Stratum 3 timing
- Multimode LED-based interfaces

4. Multiservice Switch Operating Software (MXOS™)

Carrier-class, innovative software for increased switch reliability and network scalability, IP/MPLS Feature Pack is available for advanced IP services delivery

5. Navis™ Network Management Software

- End-to-end, standards-based management of Lucent IP, MPLS, FR, and ATM multiservice networks
- Multiservice management from a single platform
- Reduced operating costs
- Point, click, done provisioning for faster and easier service delivery, moves, adds, and changes
- Helps minimize service provider training costs for multiservice solutions
- Extensive configuration, performance management, and security support

6. Physical Dimensions	
Size:	Height 33.25" (84.46 cm)
	Width 19" (48.26 cm)
	Depth 15" (38.1 cm)
Weight:	Less than 200 lbs (90.7 kg) fully configured
Rack Mount Options:	EIA 19"or 23" midmount, central office style
7. Power Requirements	
AC Power	Autoranging 100 to 240 AC
DC Power	-48 to -60 volts DC
Current	12 amps @ 120 volts AC 45 amps @ -48 volts DC
Thermal Dissipation	Maximum: 1400 watts per power supply

To learn more about our comprehensive portfolio, please contact your Lucent Technologies Sales Representative, Lucent BusinessPartner or, visit our web site at www.lucent.com, or www.lucent.com/products/multiserviceswitching

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