



Promina BBS: Broadband Multiservice Switch

Fully-featured, integrated ATM switch

- Advanced IP functionality
- Enhanced service delivery
- Edge aggregation

The Promina BBS™ multiservice switch combines fully-featured ATM switching, an IP routing engine, and Ethernet termination within a unique hybrid IP and ATM architecture. This combination enables network operators to aggregate and adapt their legacy access network to high-speed ATM, IP and MPLS broadband cores and allows network providers to deliver enhanced customer services.

FULLY FEATURED INTEGRATED ATM SWITCH

The Promina BBS offers a full ATM switching fabric designed to maintain support for existing ATM network traffic. The BBS supports LAN emulation services and complete ATM CoS including CBR, VBR, UBR, ABR and GFR and ATM adaptation layers (AAL) 1, 2 and 5. Support is provided for PVCs SPVCs, SVCs with PNNI and HPNNI routing over physical interfaces ranging from RS530 to OC-48.

ADVANCED IP FUNCTIONALITY

The Promina BBS runs the Cisco IOS-based routing engine, offering seamless integration with most IP network infrastructure. The BBS offers a wide range of IP routing protocols and MPLS functionality for edge aggregation and migration of legacy applications and services across an IP or MPLS core. The BBS has fast Ethernet and Gigabit Ethernet interfaces for connectivity to high-capacity core IP networks and optical interfaces for packet over SONET (POS).

ENHANCED SERVICE DELIVERY

The Promina BBS supports transport and delivery of legacy services with enhanced quality of service. The unique IP-to-ATM interworking supports

delivery of video-on-demand services via an ATM access network. The BBS enables network operators to offer Transparent LAN Service over ATM, leveraging existing ATM networks to interconnect customer LANs with L2VPNs or to utilize ATM Pseudo Wire Emulation (PWE) to transport a customer's ATM traffic over an IP/MPLS backbone network.

Advanced quality of service (QoS) technology is built into the BBS platforms. The BBS QoS is based on the hybrid cell/packet architecture that enables the BBS platforms to maintain five layers of traffic shaping and preserve QoS across IP and ATM layers simultaneously. Combined with early packet detection (EPD) and partial packet detection (PPD), BBS can gracefully enforce Layer 2 class of service (CoS) while intelligently handling Layer 3 QoS and Diffserv requirements. This hierarchical traffic shaping is combined with connection admission control (CAC) and access control lists (ACL) to guarantee new services and sessions get the bandwidth required.

EDGE AGGREGATION

The Promina BBS has a wide range of interfaces, from T1 to OC48, RS-530 high-speed serial, as well as 10/100 and Gigabit Ethernet. BBS has a strong linkage to the Promina multiservice access platform, providing the ability to aggregate legacy traffic from the Promina series platforms and transport it over an ATM or IP backbone. The BBS ATM and IP edge aggregation enables network operators to support any service without disrupting existing enterprise connectivity and preserve investment in existing ATM edge and CPE infrastructure while migrating to the new IP-enabled core.

PROMINA BBS SPECIFICATIONS

Network Control Plane (NCP)

- Separation of data and control plane functions
- Signaling control plane for ATM, IP and MPLS
- NEBS compliant, AC/DC versions

Line Card – Network Data Plane (NDP)

- Cell switching and packet forwarding path
- OC-48 wire-speed IP flow classification, marking, policing, queuing, scheduling and shaping
- Contentionless and non-blocking switching architecture

I/O Cards – Port Interface Modules

- Uni-personality Modules
 - 8 port OC-3c / STM-1 (ATM and POS)
 - 2 port OC-12c / STM-4 (ATM and POS)
 - 1 port OC-48c / STM-16 (ATM and POS)
 - 8 port DS3/E3 (ATM)
 - 8 port 10/100 Ethernet
 - 2 port Gigabit Ethernet
 - 8 port RS-530 (ATM and CES)
- Multi-personality Modules
 - 4 port RS-530 (ATM, IP and CES) and 4 port DS3/E3 (ATM)
 - 4 port OC-3c / STM-1 (ATM and POS) and 4 port 10/100 Ethernet
 - 4 port OC-3c/STM-1 (ATM and POS) and 4 port DS3/E3 (ATM)
 - 6 port T1/E1 and 2 port RS530 (ATM, IP and CES)

IP Features

- Cisco IOS® -based routing infrastructure
- Static, RIP, OSPF, IS-IS, BGP-4 and EIGRP
- IP multicasting (IGMP, PIM-SM, MBGP, SSM)
- ECMP for all routing protocols
- Hardware-based IP fragmentation and reassembly
- IP address-pool management via RADIUS

IP QoS and Traffic Management Features

- Hardware-based QoS support for all services
- Hierarchical shaping/scheduling (IP flow, VC, VC group and VP levels)
- Bandwidth-on-demand for ATM and IP connections; guaranteed bandwidth delivery via IP and ATM CAC
- Bi-directional IP QoS support for all routable interfaces and session-based services
- Extensive layer-2 and layer-3 classification
- Diffserv marking and classification; up to six forwarding classes per subscriber (expedited, assured and best-effort) as per Diffserv architecture
- Class-based weighted fair queuing (CBWFQ) and strict priority queuing (PQ)

ATM Features

- PVC, SPVC and SVC support
- UNI 3.1, 4.0 and 4.1
- PNNI 1.0 and 1.1, H-PNNI, and AINI 1.0 and 1.1
- ILMI, OAM
- Multicast (point-to-multipoint connections)
- CBR, VBRrt, VBRnrt, UBR, UBR+, UBR+MDCR, ABR and GFR classes of service
- Circuit emulation services over ATM

Ethernet Features

- VLAN tagging (802.1q encapsulation)
- VLAN to Diffserv mapping
- Layer-2 VPN support across ATM backbone (TLS)

MPLS

- LDP
- MPLS/BGP-4 based L3 VPN
- ATM PWE over IP/MPLS

BRAS Features

- PPPoA, PPPoE over ATM, PPPoE over Ethernet
- Bridged, half-bridged and routed circuits
- PTA (PPP termination) support
- LAA (L2TP aggregation) including LAC, LNS, LTS and tunnel groups
- DHCP relay agent (plus option 82)
- RADIUS client (extensive VSAs); RADIUS / DHCP server

Legacy Migration Features

- Integrated support for Promina SCLX™ and IPTRK high-speed interfaces
- Support for Promina-based RFC1483 and RFC1490 interworking
- Multimegabit serial interfaces for Promina trunk connectivity
- RS530/RS530A compliant
- Asymmetric data rate configuration
- Supports all nx64 Kbps data rates up to 32 Mbps plus 5 user-configurable rates
- ATM UNI and IP/HDLC over serial applications
- CES over IP and ATM

Security

- SNMPv3, SSH
- PAP, CHAP authentication for RADIUS based services
- Extensive ACL support for all routable interfaces and session-based services
- Detailed logging per ACL
- Denial of Service (DOS) attack mitigation and protection, anti-spoofing
- Unicast Reverse Path Forwarding (RPF)

Reliability and Redundancy

- No single point of failure
- Passive backplane for hot-insertion/removal of all modules
- 1+1 redundancy for NDP, NCP, network timing module, Gigabit Ethernet
- N+1 fan redundancy
- Dual -48V DC power feeds

Network Timing

- Synchronization function with Stratum 3 performance
- Local Stratum 3 clock as reference
- Redundant timing sources

Management Interfaces

- SNMPv2c or SNMPv3
- netMS - N.E.T.'s network management system
- RADIUS
- Cisco IOS-based CLI

Physical Shelf Properties

- 100% front access for ease of operation
- -40V to -60V DC power input
- 110-240V AC power input (via external 1RU redundant power rectifier)

NEBS, Safety, and Environmental Compliance

- NEBS Level 3 certified
- GR-1089-Core, GR-63-Core
- ETSI ETS 300 019 series
- EN 300 386, EN60950
- UL 1950, FDA Laser Safety, FCC Part 15 Class A and the CE requirements under the EMC, Low Voltage, and Radio and Telecommunications Terminal Equipment Directives.

Model	ProminaBBS 5000	Promina BBS10000
Throughput	5 Gbps	40 Gbps
Chassis per Rack	30	6
Line Modules (NDP) per Chassis	1	4
Port Interface Modules per Chassis	2	8
Control Plane Redundancy	✓	✓
Data Plane Redundancy	×	✓
Port Redundancy	×	✓
NEBS Level-III Certification	✓	✓
Dimensions (HxWxD)	5.25 x 17.30 x 11.0 in. 13.34 x 43.94 x 27.94 cm	26.25 x 17.30 x 11.0 in. 66.68 x 43.94 x 27.94 cm
Power Consumption	250W	1000W



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