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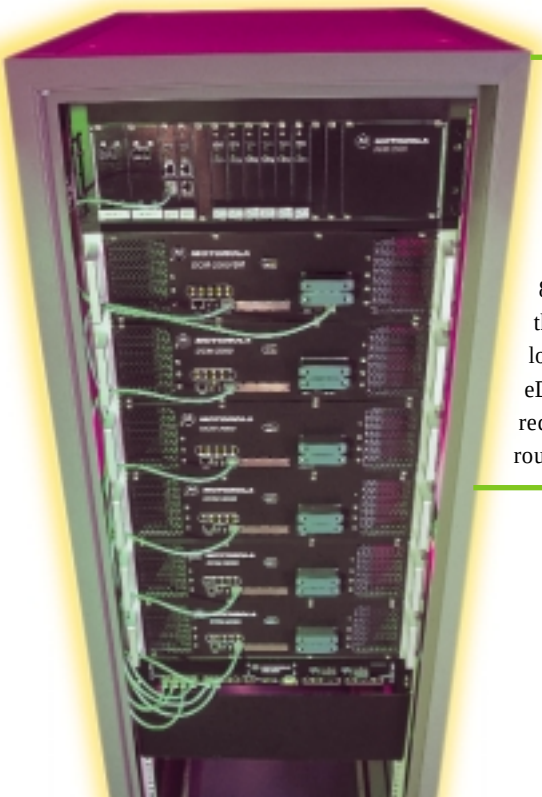
IP Module IPM 8000

The Motorola IPM 8000 combines wire-speed performance, pinpoint control and superior routing capacity to meet the needs of cable networks now and into the future. Equally important, the standards based Motorola IPM 8000 provides seamless interoperability with existing network equipment, protecting an operator's investment. In addition to featuring Layer 2 switching and wire-speed full function routing, the IPM 8000's unique ability to switch Layer 4 application flows extends its functionality well beyond the boundaries of the traditional routers. The advanced capability provides pinpoint control of network traffic through extensive security, port level accounting and comprehensive Quality of Service (QoS) – all at the application level and all without sacrificing wire-speed performance. Powered by custom ASIC's, the Motorola IPM 8000 routes packets at wire-speed based on conventional source/destination data or application level information. This provides operators with the performance they need, while extending their control to the application layer.



When combined as part of the CAS 2000, the Motorola IPM 8000 delivers a complete high availability CMTS router solution. A single IPM 8000, when connected to the dual 100BaseT ports located on the DCM 2000 or eDCM 2000, provides a fully redundant, high availability router network.

Features

- Standards based, full function wire-speed switching on every port
- Maximum configuration of 96 10/100BaseT ports or 12 Gigabit Ethernet ports
- Wire-speed performance regardless of the performance monitoring, filtering and QoS features enabled by the software
- Layer 2, 3 and 4 security filters
- Multicast routing support for IGMP, DVMRP
- 20,000 security and access-control filters

Industry Leading Performance/Throughput Capacity

- 70 km Gigabit Ethernet line card provides extra-long haul connectivity between headends
- 16-Gbps non-blocking switching fabric
- Up to 15 million packet per second routing throughput
- Up to 250,000 routes
- Up to 2,000,000 Layer 4 application flows
- Up to 400,000 Layer 2 MAC addresses

Layer 4 Application Control

- Wire-speed Layer 4 application QoS flow switching; DOCSIS 1.1, VoIP and PacketCable QoS ready

Benefits

- User-friendly control/management interfaces
- Multiple hardware/software configurations to support all network architecture requirements
- Gigabit Ethernet and ATM WAN Interfaces
- Long reach 70 km Gigabit Ethernet interface
- Full routing capability. IP: RIP v1/v2, OSPF, BGP 2, 3, 4; Multicast: IGMP, DVMRP
- Layer 2, 3, and 4 switching and routing
- Standards based design provides easy integration to existing network components
- Flexible QoS policies guarantee service to specific hosts, applications and flows during peak periods
- Provides extensive statistical data on demand to improve network design/planning
- Redundant power supplies
- All modules offer hot-swappable capability
- Supports multiple DCM 2000 or eDCM 2000 clusters

intelligence everywhere™

IPM 8000 SPECIFICATIONS

GENERAL

Performance.....	16 Gbps non-blocking switching fabric
	Up to 15 million packets per second routing throughput
Capacity.....	Up to 250,000 routes
	Up to 2,000,000 Layer 4 application flows
	Up to 400,000 Layer 2 MAC addresses
	4,096 Virtual LAN's (VLAN's)
	20,000 Layer 2 security and access control filters
	3 MB input/output buffering per Gigabit port
	1 MB input/output buffering per 10/100 port
	20 MB shared input/output buffering across WAN ports on a WAN module
Routing Protocols & Standards.....	IP Routing: RIPv1/v2, OSPF, BGP-4, IPX Routing: RIP, SAP
	Multicast Support: IGMP, DVMRP
	QoS: Application level - see below
	IEEE 802.1p — IEEE 802.3u
	IEEE 802.1q — IEEE 802.3x
	IEEE 802.1d Spanning Tree — IEEE 802.3z
Quality of Service (QoS).....	Layer 2 prioritization (802.1p), Layer 3 source destination flows
	Layer 4 source destination flows, Layer 4 application flows
RMON.....	RMON v1/v2 for each port
Redundancy.....	Line Cards, Control Module (when redundant control module is installed and online), Power Supply

ENVIRONMENTAL

Operating Temperatures.....	+5° C to 40° C (41° F to 104° F)
Non-Operating Temperature.....	-30° C to 73° C (-22° F to 164° F)
Operating Humidity.....	15% to 90% (non-condensing)
Power Consumption.....	100 - 125 VAC, 5A Max. or 200 - 250 VAC, 3A Max. 325 W 36-72 V, 14A@48 V nominal, 325 W
Safety.....	Meets the requirements of UL1950, CSA C22.2, No. 950, EN60950, IEC950 and 72/73/EEC
Electromagnetic Compatibility.....	Compliant with the requirements of FCC Part 15, Class A, ICES-003, Class A, CSA C108.8, EN55022, VCCI V-3/93.01, EN50082-1 and 89/336/EEC

PHYSICAL

Interfaces.....	10/100Base-TX
	100Base-FX
	1000Base-SX
	1000Base-LX
	ATM: OC-3 MMF
	OC-3 UTP
	OC-3 SMF-IR
	T-3
	E-3
	T-1 UTP
	E-1 UTP
In-Band Management.....	Remote SNMP via Standard MIB Browser
Out-of-Band Management.....	RS-232 and Telnet
Dimensions.....	8.75" H x 17.25" W x 12.25" D (22.23 cm x 43.82 cm x 31.12 cm)
Weight.....	40 lbs.

PRODUCT DESCRIPTION

The IPM 8000 with 128 MB of internal memory, provides full routing capabilities, Layer 2, Layer 3 and Layer 4 functionality, combined with wire-speed performance. With 16 Gigabit per second non-blocking switching fabric, the IPM 8000 delivers 15 million packets per second of routing throughput to the backbone network.

The 8 slot chassis can be configured with up to 96 10/100BaseT ports or up to 12 Gigabit Ethernet ports. With dual power supplies and dual hot-swappable control modules, the IPM 8000 delivers a fully redundant solution. In addition, the IPM 8000 provides an array of hot-swappable WAN interfaces that allow the operator to add expansion cards to the chassis as their network requirements increase.

The interfaces supported by the IPM 8000 include:

10/100BaseT (Fast Ethernet):

- Eight port, RJ-45 connector
- Cable Requirement: UTP, CAT 3/4/5 for 10BaseT, CAT5 for 100BaseT
- Segment Length: 100 meters (328 feet)

10/100BaseT (Fast Ethernet):

- Sixteen port, RJ-45 connector
- Cable Requirement: UTP, CAT 3/4/5 for 10BaseT, CAT5 for 100BaseT
- Segment Length: 100 meters (328 feet)

1000Base-SX (Gigabit Ethernet):

- Dual port, SC type, MIC connector
- Cable Requirement: 62.5/50.0 Micron, multimode fiber
- Segment Length: 2 to 275 meters (902 feet) for 62.5 micron
- Segment Length: 550 meters (1,804 feet) for 50.0 micron

1000Base-LX (Gigabit Ethernet):

- Dual port, SC type, MIC connector
- Cable Requirement: 62.5/50.0 micron, multimode fiber, 10.0 micron single mode fiber
- Segment Length: 2 to 550 meters (1804 feet) for 62.5 and 50.0 micron
- Segment Length: 2 meters to 5 kilometers (16,400 feet) for 10.0 micron

1000Base-LX (Gigabit Ethernet) 70 km:

- Single port, SC type, MIC connector
- Cable Requirement: 10.0 micron single mode fiber
- Segment Length: 15 to 70 kilometers (43.4 miles)

Other Interface Modules:

100Base-FX

ATM:

- OC-3 MMF
- OC-3 UTP
- OC-3 SMF-IR
- T-3
- E-3
- T-1 UTP
- E-1 UTP

CONCLUSION

Layer 3 switches are meeting market demands for delivering complete QoS and DOCSIS 1.1 solutions that offer wire-speed performance and Gigabit uplinks. Network environments, requirements and demands have evolved to wire-speed forwarding with Layer 2 and 3 switching functionality.

The Motorola IPM 8000, with Layer 2, 3 and 4 switching capability, meets the demands of today's state-of-the-art cable networks. Combined with flexible expansion modules, including Gigabit Ethernet, the IPM 8000 delivers wire-speed connectivity to the backbone network. With Layer 4 switching, application level control can be extended allowing operators to apply QoS and Access Control Lists (ACL) to manage applications.

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Specifications subject to change.

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