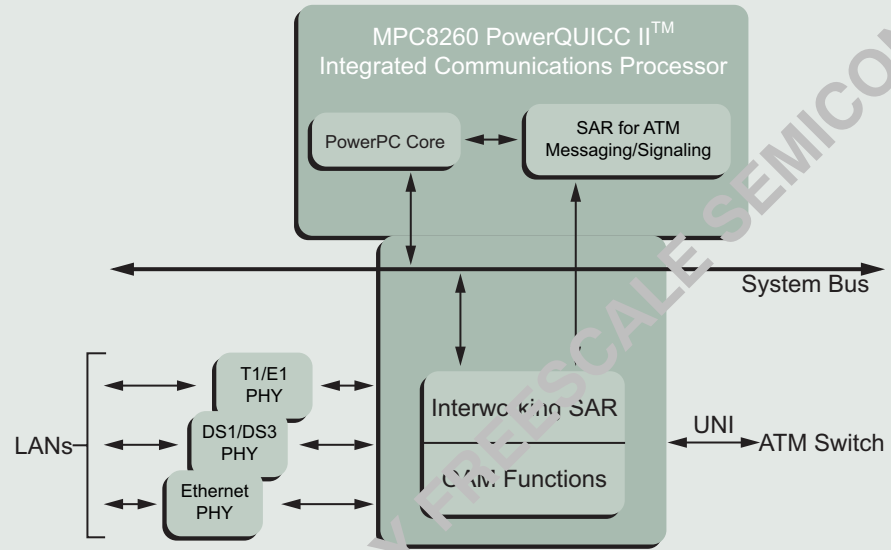# ATM Internetworking Multiplexer

Overview

In order to accommodate today's new breed of switch-routers designed for "new world" carrier networks, existing access protocols must be converted to support broadband applications. Multimedia and other high-bandwidth applications support ATM, where quality of service is an important consideration. The ATM interworking switch/multiplexer enables seamless integration between LANs and ATM networks

ATM INTERWORKING MULTIPLEXER BLOCK DIAGRAM

Key Benefits

> Enables seamless integration between LANs and ATM networks

> Compliant with the ATM Forum's UNI specification

> Supports statistical multiplexing, traffic management, cell buffering and queuing, priority schemes, and fairness algorithms

> Provides cost-effective protocol integration

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Freescale Ordering Information

Part Number	Product Highlights	Additional Information
MPC8266 MPC8265 MPC8264 MPC8260 MPC8255	> System core microprocessor supporting frequencies of 133 to 300 MHz > System integration unit (SIU) > High-performance communications processor module (CPM) with operating frequency of 133, 166, or 200 MHz > Two bus architectures: one 64-bit 60x bus and one 32-bit PCI or local bus > Two UTOPIA level-2 master/slave ports with multi-physical support > Three MII Interfaces > Eight TDM interfaces (T1/E1), two TDM ports can be glueless to T3/E3 > 1.8 V or 2.0 V internal and 3.3 V I/O > 300 MHz power consumption: 2.5 W > 480 TBGA package (37.5 mm x 37.5 mm)	www.freescale.com/smartnetworks
MPC862 MPC860 MPC857T MPC855T MPC850	> Embedded MPC8xx Core > Instruction and data MMUs > Up to 32-bit data bus (dynamic bus sizing for 8,16, and 32 bits) > 32 address lines > Complete static design (040 MHz operation) > Memory controller (eight banks) > General purpose timers > System integration unit (SIU) > Interrupts > Communications processor module (CPM) > On-chip 16x16 multiply accumulate controller (MAC) > Four baud rate generators > Four serial communication controllers (SCC) > Two serial management channels (SMC) > One serial peripheral interface (SPI) > One inter-integrated circuit (I^2C) port > Time slot assigner > Parallel interface port > PCMCIA interface > Low power support > Debug interface > 3.3 V operation with 5 V TTL compatibility	
MC92501	> Dedicated high performance ingress and egress cell processors combined with UTOPIA Level 2-compliant physical (PHY) and switch interface ports > Second generation ATM cell processor > Full-duplex operation at data rates up to 155 Mbps > Implements ATM layer functions for broadband ISDN according to ATM Forum UNI 4.0 and TM4.0 Specifications, ITU and Bellcore recommendations	

Design Challenges

The combination of interfaces and services presents a difficult challenge to multiplexer implementation, considering time-to-market constraints. The interface between the MUX and the network must be compliant with the ATM Forum's UNI specification and support statistical multiplexing, traffic management, cell buffering, cell queuing, priority schemes, and fairness algorithms in accordance to the ATM Forum's TM specification. Traditional approaches require separate hardware and general purpose CPUs for each interface type and protocol, which results in many individual designs and limited reuse of software.

Freescale Semiconductor Solution

Freescale Semiconductor's MPC8260 PowerQUICC II™ is an advanced integrated communications processor designed for cost-effective protocol integration. With its embedded 64-bit core using PowerPC™ ISA and 32-bit communications processor module, the MPC8260 supports many combinations of protocols simultaneously. When used as an ATM multiplexer, it connects different user devices (for example, DS1, DS3,T1/E1, Ethernet) then translates the protocols to ATM cell format and multiplexes the cells into a UNI interface (OC-3c or DS3 PLCP). The UNI interface may connect to the ATM switch.

The MPC8260 provides some operation, administration, and maintenance (OAM) functions to monitor network interface status and to ensure the quality of provisioned services.

In addition, the MPC8260 supports multi-service platform controller (MSP) microcode, which adds ATM layer functionality to the PowerQUICC II device and enables its implementation on various network applications, such as controllers on line cards, ATM cell processing, cable modem controllers, and various multi-service, multiprotocol applications. It carries out most of the ATM switching functionality in both the ingress and egress directions. For more comprehensive services and a higher-rate network interface, consider the MC92501 ATM cell processor (ATMC).

The established code base and broad third-party support from Freescale Semiconductor's Smart Network Alliance Program members further enable cost-efficient solutions and accelerated time-to-market for ATM interworking equipment suppliers.

Development Tools [Note]

Tool Type	Product Name	Vendor	Description
Software	CWEPPC	Metrowerks	CodeWarrior Development Studio for PowerPC ISA
Software	CWLINPPC	Metrowerks	CodeWarrior Development Studio. Linux Application Edition for PowerPC
Development Kit	MPC8260ADSKIT	Freescale Semiconductor	MPC8260 Application Development System Kit
Hardware	MPC8260ADS-L2C	Freescale Semiconductor	MPC8260 Application Development System (with L2 cache) (discontinued)
Hardware	MPC8260ADS-PQ2	Freescale Semiconductor	MPC8260 Application Development System
Development Kit	MPC8266ADS-KIT	Freescale Semiconductor	MPC8266 Application Development System Kit
Hardware	MPC8266ADS-PCI	Freescale Semiconductor	MPC8266 Application Development System (for PCI Host Mode)
Hardware	MPC8266ADS-PCIAI	Freescale Semiconductor	MPC8266 Application Development System (Add-In Card)
Hardware	MPC8XXFADSMB	Freescale Semiconductor	MPC8xx Family Application Development System Motherboard

Note: For detailed information, go to www.freescale.com and click on Tools. Search for tools by product or technology, family or function, and product number.

Notes

Learn More: Contact the Technical Information Center at +1-800-521-6247 or +1-480-768-2130.

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