

Regional Office Router

Overview

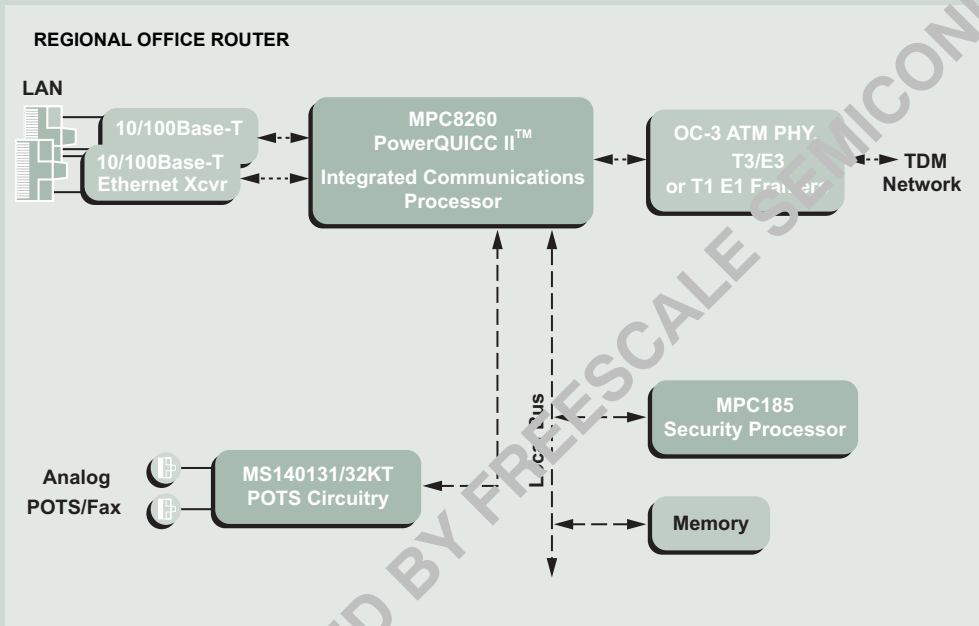
The regional office router is designed to link several geographically dispersed offices.

This type of router typically supports several serial connections, such as 10/100 Ethernet or other peer-based network protocols for specific office requirements. Further, a high-speed time division multiplexing (TDM)

connection to transfer data among multiple locations, effectively keeps these locations on the same network. Support for secure links (virtual private network tunnels) between the regional offices and with the central office is also mandatory in most new branch office router configurations.

Key Benefits

- > Tightly integrates the forwarding plane and control plane
- > Reduces the development time devoted to integration tasks



Freescale Ordering Information

Part Number	Product Highlights	Additional Information
MPC8260	PowerQUICC II Integrated Communications Processor	www.freescale.com/netcomm
MPC185	Security Processor	www.freescale.com/securityprocessor

Design Challenges

In the past, designers were challenged to interface a microprocessor with several peripherals and their necessary glue logic. This was expensive in terms of board space and power requirements. Upgrades were difficult to perform. Another challenge was implementing the many protocols, including security protocols, and interfaces between the different network segments while achieving the required system bandwidth and performance.

Freescale Semiconductor Solution

Freescale Semiconductor's PowerQUICC™ and PowerQUICC II™ families of integrated communications processors (IPCs) offer a unique solution by integrating serial communications ports with a dedicated RISC microprocessor on the same silicon with a microprocessor and a system interface unit (SIU). The communications processor module (CPM) consists of a RISC microprocessor associated with single-cycle-access, dual-port static RAM dedicated to service serial communications ports. These ports use direct memory access (DMA) to transfer serial data to external memory. On the other side of the dual-port RAM is a microprocessor for data link layer and maintenance processing, as well as the SIU. The SIU consists of a versatile

programmable memory controller, reset circuitry, phased locked loop (PLL), and timers.

Select the specific family member satisfying your data rate requirements and enjoy the benefits of a flexible, cost-effective design. In addition, the established code base and broad third-party support from Freescale Semiconductor's Smart Networks Alliance Program members further enable cost-efficient solutions and accelerated time-to-market for router equipment suppliers. Cost-effective, easy to integrate security processors are available for every family member in the PowerQUICC and PowerQUICC II families. As shown in the figure on page 1, the MPC8260 PowerQUICC II can support OC-3 ATM rates, T3/E3 or T1 framers on the TDM side, while connecting to several 10/100Base-T Ethernet interfaces on the LAN side. Its powerful CPM can be programmed to support several other popular protocols and also provides a direct interface to most physical layer (PHY) devices. In ATM mode, the local bus is used to store connection tables for active ATM connections. Additional ports remain available for system management functions.

The MPC185 security processor is easily integrated into PowerQUICC II systems

via the 60x bus. The MPC185 achieves its high performance through 60x bus mastering and immediate access to system memory. By avoiding data transfers across bridge and secondary buses, the MPC185 provides PowerQUICC II system designers with the ultimate security chipset for mid-range VPN applications.

Secure communication between branch offices allows users in geographically distributed locations to exchange confidential and proprietary data without fear of interception or manipulation. The most common secure links between routers are those encrypted and authenticated with IPSec, using encryption algorithms such as 3DES and authentication via SHA-1.

Executing IPSec in the host processor reduces system performance to an unacceptable degree. Accelerating the encryption and authentication functions, as well as the public key algorithms used to establish secure sessions, using a security processor allows security to be implemented without reducing system throughput. Freescale Semiconductor has a variety of security processors available at price/performance points appropriate to the branch office routers easily built using the PowerQUICC and PowerQUICC II families of communications processors.

Development Tools

Tool Type	Product Name	Vendor	Description
Hardware	MPC8260	Freescale Semiconductor	Security Processor
Hardware	MPC185	Freescale Semiconductor	Security Processor

Related Information

PowerQUICC Integrated

Communications Processors

- > MPC850 family
- > MPC855T with Fast Ethernet support
- > MPC857T with Fast Ethernet and enhanced ATM support
- > MPC860 family
- > MPC862 with enhanced ATM support
- > MPC8250, MPC8255, MPC8260, MPC8264, MPC8265, and MPC8266 PowerQUICC™ II next-generation family

PowerQUICC™ and PowerQUICC™ II

PowerQUICC™ and PowerQUICC™ II microcodes packages provide enhanced forwarding plane features PowerQUICC II next-generation family MPC180/184/185 Security Processors.

Freescale Semiconductor's Smart Networks Alliance Program

Freescale Semiconductor's Smart Networks Alliance Program is designed to enable the broadest suite of solutions for communications OEM customers leveraging the Smart Networks Platform.

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