

# Integrated Multi-Service Gateway Reference Design

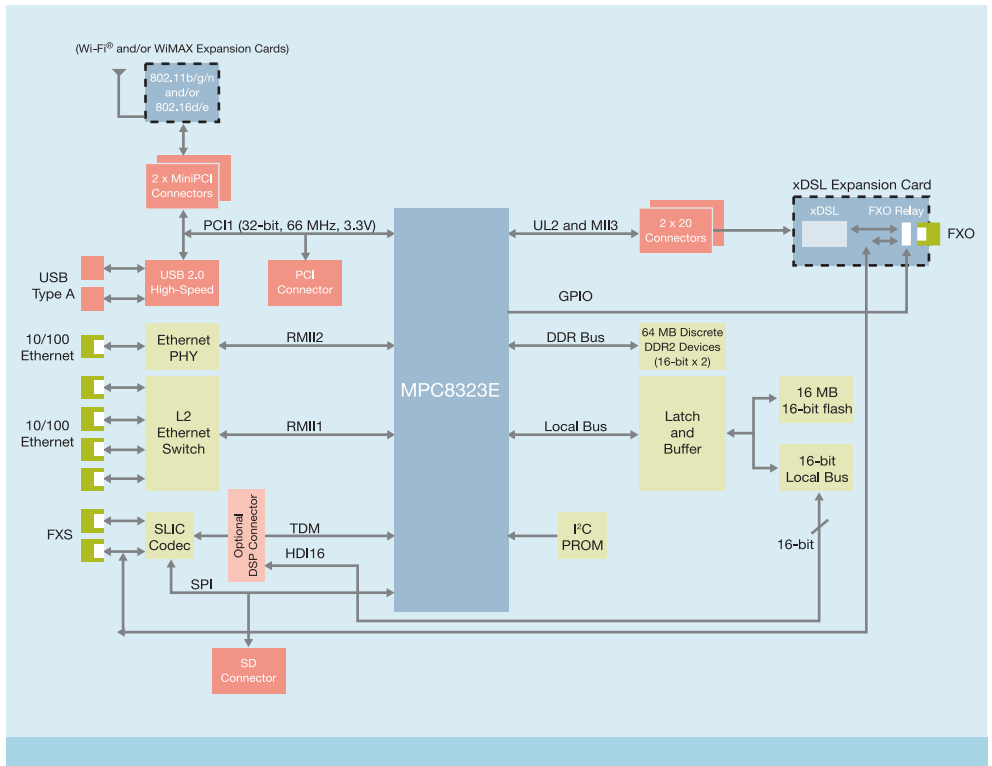
Next-generation residential gateway products will be challenged to maintain bridging/routing throughput speeds as WAN interfaces (WiMAX, GPON, VDSL2) stream more packets per second. The products that survive will deliver this level of performance and the flexibility to support multiple LAN interfaces (802.11n, HPNA 3.1, MoCa, HomePlug AV and UPA).

In addition to performance, these products must also bring the right balance of consumer required features and ease of use, while supplying service providers with a cost-effective platform that enables future services via remotely managed upgrades. Triple-play deployment requires better Quality-of-Service (QoS) management and security in the gateway to provide stronger protection (firewall, access, intrusion detection/prevention services, anti-virus/anti-spam). These features give service providers the confidence they need to securely deliver premium audio/video content to their valued customers.

## Freescal Value Proposition

Freescal brings a broad portfolio of proven PowerQUICC™ network communications products, firmware and reference designs that support multiple network interfaces. These reference designs have the flexibility to integrate new features and are adaptable across product lines to help protect your investment and maintain a “first to market” edge over the competition.

## MPC8323E Reference Design Board



The MPC8323E-RDB is a turnkey hardware/software reference platform designed to rapidly provide the core elements of tomorrow's multi-service gateway products.

The MPC8323E-RDB leverages the processing power of the MPC8323E PowerQUICC II Pro integrated communications processor. Built on Power Architecture™ technology, the MPC8323E family of products integrates a proper balance of architectural features (e300

core, dual integer units, 16 KB instruction and 16 KB data caches) along with a DDR 1/2 memory controller, RISC-based communications engine (QUICC Engine™) and an optional hardware security engine.

Performance Estimates	64 B Packets	256 B Packets	512 B Packets	1450 B Packets
IPv4 Forwarding Throughput (Mbps)	142 Mbps	200 Mbps	200 Mbps	200 Mbps
QUICC Engine™ Utilization (% of total available)	85%	44%	33%	26%
IPv4 Forwarding with NAT/Firewall (Mbps)	96 Mbps	200 Mbps	200 Mbps	200 Mbps
QUICC Engine Utilization (% of total available)	86%	62%	41%	27%
IPSec ESP (3DES-HMAC-SHA-1)	10 Mbps	36 Mbps	74 Mbps	181 Mbps

Note: Estimates based on capability of QUICC Engine running optimized microcode. Throughputs are for aggregated Ethernet to Ethernet traffic using MPC8323E 333 MHz e300 core, 200 MHz QUICC Engine.

Freescale's industry-recognized QUICC Engine technology, derived from its predecessor, the Communications Processor Module (CPM), provides a substantial performance advantage to network communications-intensive applications. Typical data path applications requiring a significant percentage of CPU cycles to process can be offloaded to the QUICC Engine technology, freeing up the CPU to perform other application-critical functions.

Similarly, the optional hardware security engine is designed to offload the CPU from processing computationally intensive encryption and authentication algorithms. This engine provides support for IPSec, SSL/TLS, SRTP and 802.11i protocols.

### System Features

- Flexible WAN interfaces
  - RJ45 100BT Ethernet and connectors for WiMAX, ADSL2+/VDSL2
- IPv4 router with VPN capability
  - Up to 640 DMIPS e300 CPU
  - QUICC Engine technology acceleration, 200 MHz
    - Bridging/routing with NAT
    - Firewall support (ACL)
    - QoS for IPTV, VoIP and high-speed data
  - VPN termination and pass-through



**Orderable Part Number**  
**MPC8323E-RDB**

### Board Interfaces

- Flexible network interfaces
  - 10/100 Ethernet
- 4-port 10/100 Ethernet LAN
- Two FXS ports for analog phones
- Two USB 2.0 host (480 Mbps) type A ports
- Two MiniPCI slots, one PCI slot
- One serial port

### Development Environment

Freescale's well established vertical ecosystem provides customers with the exact development flow they desire.

The MPC8323E-RDB is kitted with:

- Encased CPE form factor board with power supply
- Freescale Linux® 2.6 (LTIB)

### Freescale/Third-Party Software

- Ethernet Switch
- WiMAX
- Wi-Fi®
- SLIC
- VoIP

**Learn More:** For current information about Freescale products and documentation, please visit [www.freescale.com](http://www.freescale.com).



Freescale™ and the Freescale logo are trademarks of Freescale Semiconductor, Inc. All other product or service names are the property of their respective owners. The Power Architecture and Power.org word marks and the Power and Power.org logos and related marks are trademarks and service marks licensed by Power.org.  
© Freescale Semiconductor, Inc. 2007

Document Number: MPC8323ERDFS  
REV 2

