

SR-110 10GE VXS Gateway

10 GigE Gateway to Serial RapidIO®-Based VXS Systems

- High-bandwidth connectivity between sensor processing fabric and C4I network
- Transparent data movement among different network types
- Conversion of 10 Gigabit Ethernet to and from serial RapidIO®
- Flexible, high-bandwidth I/O for VXS (VITA 41) systems
- Seamless configuration and startup



The SR-110 10GE VXS Gateway from Mercury Computer Systems is a network-centric building block that brings the flexibility and extensibility of 10 Gigabit Ethernet to embedded signal processing. The Gateway transports data among multiple switch fabrics and I/O protocols, efficiently linking sub-systems based on different communications standards without user intervention or translation.

By deploying the Gateway in VXS, developers can implement a single, platform-wide Ethernet network that streams sensor data to C4I (command, control, communications, computers, and intelligence) applications. It delivers flexible I/O connectivity, capable of moving high-bandwidth data streams into and out of powerful VXS processing systems.

Combining Connectivity and I/O Processing

The Gateway can stream 10 Gigabit Ethernet data between an external network and the serial RapidIO intra-chassis network, available through the VXS P0 connector. A pre-configured mezzanine card functions as the 10 Gigabit Ethernet interface, with a direct connection to the serial RapidIO crossbar, providing seamless data movement between the two fabrics. The mezzanine card is an integral part of the Gateway.

Inside the chassis, serial RapidIO delivers encapsulated TCP/IP messages to the VXS boards' compute nodes. Berkeley socket calls can be used to move data within the chassis among the VXS modules in the system. The Gateway can also serve as the Slot 1 controller in a VXS multicomputer.

Building on the PowerStream® 6100 VXS technology, the Gateway implements a Freescale™ MPC8548 I/O processor, 512 MB of DDR2 memory, 32 MB of flash memory, the 10 Gigabit Ethernet interface, and an 8-port serial RapidIO crossbar.

Support for RapidIO and 10 GigE

For inter-processor communication, intra-chassis communication, and data movement, the Gateway supports two network types. Serial RapidIO communication is supported to other system modules using the VXS P0 connector via two 4x serial links, with each link capable of operating at 1.0 GB/s full duplex. 10 Gigabit Ethernet is supported via the integrated mezzanine card's front-panel connector.

MPC8548 PowerQUICC™ III Processor

The MCP8548 processor is a highly integrated system-on-chip (SoC) device that includes a Power Architecture™ core, serial RapidIO, Gigabit Ethernet controllers, and an integrated DDR2 memory interface. The combination of these features makes this device an optimal communications processing solution for Ethernet and serial RapidIO inter-working applications.

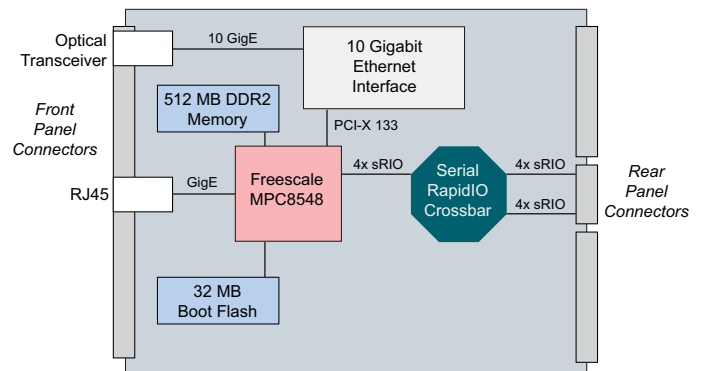


Figure 1. SR-110 Gateway block diagram

Gateway and Bridging Support

With MultiCore Plus™ software, the Gateway supports both gateway and bridging modes. Support features include:

- Bridging/forwarding of all Ethernet frames (Transparent Layer 2 switch in bridge mode)
- Broadcast and multicast with IGMP v2 snooping in both directions
- Redundant/failover gateway support

Simple Configuration

The Gateway self-boots at system power-up. It is user-configured through a laptop or PC connection to the front panel. No other software or configuration is required to enable data streaming from an external 10 Gigabit Ethernet network into the VXS system.

RapidIO Experience and Expertise

As the pioneer of heterogeneous switch fabric-based computing and co-developer of the RapidIO technology, Mercury is uniquely equipped with system and application expertise, as well as the support and consulting resources focused on RapidIO. No other supplier of RapidIO-based systems has such a proven track record of delivering reliable ultra high-bandwidth solutions.

Specifications

SR-110 Gateway

6U form factor
VITA 41.2 compliant

Freescale MPC8548 PowerQUICC III Processor

Supports 4x serial RapidIO and 4x PCI Express® simultaneously
Single reference clock 100 MHz
Data rate 2.5 Gb
On-chip AC coupling
DDR2 memory controller
64 bits wide
Bus frequency 267 MHz maximum
Supports on-die termination (ODT)
CCB clock 267 MHz maximum
Embedded DUART

Serial RapidIO Crossbar

Speed Up to 2.5 Gbaud
Supports eight 4x links
Revision 1.2 compliant

DDR2 SDRAM

Configuration 512 MB
64M x 8
Single bank
ODT support
ECC support

Serial RapidIO

Serial RapidIO speed 2.5 Gbps
4x link from MPC8548 to serial RapidIO crossbar
Two 4x links from crossbar to P0
Logic analyzer support

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