Communications Controllers

# Horizon™ Communications Controller for MIPS® Processor
MV96340

## PRODUCT OVERVIEW

The Marvell® Horizon™ MV96340 communications controller is the third generation of the industry-leading Horizon™ solution for converged applications including integrated access devices, edge routers, media gateways, and Voice-over-IP (VoIP) equipment. Based on the Marvell Discovery™-II system controllers, the Horizon MV96340 communications controller integrates a MIPS® SysAD bus interface, a DDR SDRAM memory controller, dual 32-bit /single 64-bit PCI/PCI-X bridges, two 10/100/1000 Ethernet Media Access Controllers (MACs) with a set of eight, high-speed, multi-protocol WAN interfaces, and a NetGX™ co-processor, supported by a full set of security, ATM and packet processing software. Supporting the most advanced MIPS processors, the Marvell Horizon MV96340 communications controller presents the most complete solution available today for implementing next-generation, high-performance, scalable, and affordable architectures for a large variety of converged, secured and end-to-end Quality of Service (QoS) applications.

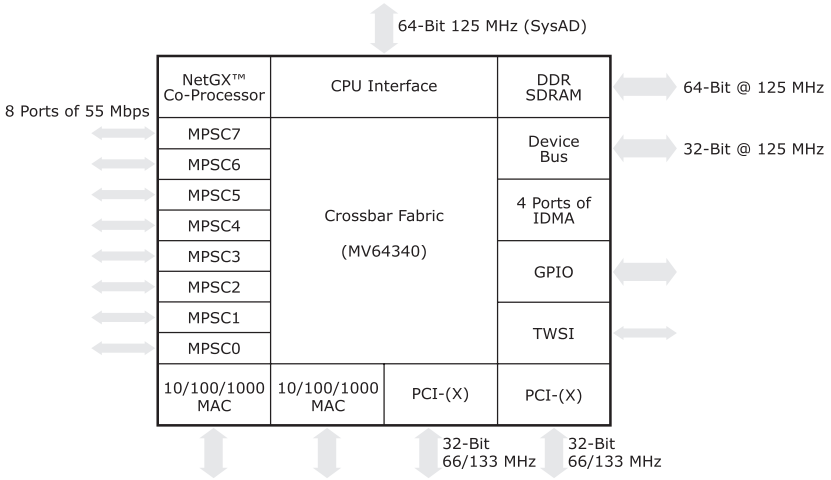


Fig 1. Horizon™ Communications Controllers (MV96340) Block Diagram

| FEATURES | BENEFITS |
|---|---|
| • Internal X-bar interconnect fabric<br>– High throughput, fully concurrent and non-blocking architecture | • Allows overall system performance optimization and full throughputs utilization |
| • 64-bit MIPS CPU bus interface<br>– 125 MHz SysAD LVCMOS and HSTL bus modes | • Supports all 64-bit MIPS processors, allowing customers to choose the right performance and cost solution for their architecture |
| • High-performance 64-bit DDR SDRAM controller<br>– 133 MHz ECC protected memory interface<br>– 8 GB address space<br>– 4-way bank interleaving and 16 open pages | • Supports the industry-standard DDR SDRAM, allowing customers to easily migrate from existing SDR SDRAM solutions and resolve memory bottlenecks |
| • 32-bit device controller<br>– Five chip selects with programmable timing, interfacing a broad range of synchronous and asynchronous devices | • Simple and versatile local bus to support a wide range of peripheral devices |
| • High-performance PCI 2.2/66 MHz or PCI-X 1.0/133 MHz interfaces<br>– Dual 32-bit or single 64-bit configurable<br>– Programmable PCI bus arbiters | • Allow customer to use readily available PCI-based ASICs and off-the-shelf solutions to fully utilize the interface performance |
| • Two 10/100/1000 Mbps Gigabit Ethernet (GbE) MACs<br>– MII and RGMII interfaces<br>– Eight entry priority queuing on receive and transmit<br>– TCP/UDP/IP hardware checksum on receive and transmit | • Combined with Marvell Alaska® PHYs, customers can migrate from 10/100 ports to emerging Gigabit interfaces |

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MOVING FORWARD FASTER®

| FEATURES | BENEFITS |
|---|---|
| • Four channel independent DMA controller<br>– All channels can move data from any-to-any interface simultaneously | • Offloads host CPU or integrated co-processor from having to move large data buffers between I/O and memory |
| • Eight 55 Mbps Multi-Protocol Serial Controllers (MPSC)<br>– Support HDLC, BiSync, UART and transparent modes<br>– Time slot assigner for eight serial and two control channels | • Provide design flexibility with hardware support for most common WAN protocols running at T1/E1 and T3/E3 line speeds |
| • Integrated NetGX co-processor<br>– 200 MHz 32-bit customized RISC processor<br>– 16/24-bit ISA provides excellent code density and efficiency<br>– 8 Kb I-cache, 2K D-cache, 4 KB of integrated SRAM | • Allows customer development of highly tuned security, ATM and packet processing system architecture, offloading the host CPU, and improving overall system performance at a reduced cost |
| • Cryptographic HW engine<br>– Dedicated hardware controlled by the NetGX™ co-processor<br>– AES, DES and 3DES encryption, SHA1 and MD5 authentication | • Significantly accelerates most common IPSec algorithms, enabling higher performance than all available off-the-shelf solutions at no added cost |
| • Comprehensive software infrastructure<br>– Fully ICSE certified NetGX software libraries for IPSec and ATM<br>– Readily available SDK tool chain for software development | • Minimizes customers' software development and shortens time-to-market |
| • System integration<br>– 80 multi-purpose I/O pins and two wire serial interface | • Lowers overall system cost, power and complexity |
| • Advanced 0.18-micron process<br>– 1.8V core, 1.8V/2.5V/3.3V CPU interface and 3.3V I/O<br>– 5V tolerant PCI interfaces<br>– 805 BGA package, 1 mm pitch | • Provides flexible architecture that works well with a wide range of off-the-shelf solutions |

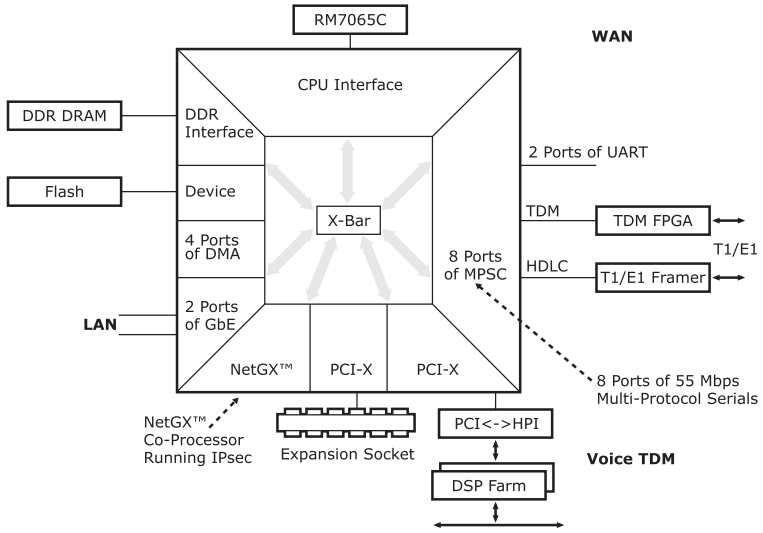


Fig 2. Horizon™ Multi-Service Router Applications Diagram

**THE MARVELL ADVANTAGE:** The Marvell Horizon communications controllers for MIPS processor comes with a complete set of hardware and software development tools to assist network hardware engineers with product evaluation. Marvell's worldwide field applications engineers collaborate closely with network equipment vendors to develop and deliver new competitive products to market on time. Marvell utilizes recognized world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low cost total solutions.

For more information, visit our website at www.marvell.com.

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**Marvell Semiconductor, Inc.**

700 First Avenue
Sunnyvale, CA 94089

Phone 408.222.2500

www.marvell.com



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