Marvell Yukon 88E8059
PCI-Express Gigabit Ethernet Controller
with Audio Video Bridging

▶ PRODUCT OVERVIEW

The Marvell® Yukon™ 88E8059 Gigabit Ethernet (GbE) controller supports the latest IEEE802.1 Audio Video Bridging (AVB) standards to enable reliable, real-time audio/video transmission over Ethernet for today's high-definition and time-sensitive multimedia streams with perfect Quality of Service (QoS). The Yukon 88E8059 device also offers unprecedented integration of Marvell's marketing-leading Gigabit MAC, PHY and PCI Express technologies in a minimal footprint in 9mm x 9mm, 64-pin QFN and 7mm x 7mm 48 QFN packages, enabling a simplified and cost-effective implementation for sleek and high performance PCs and Embedded systems. Marvell offers the industry's most comprehensive driver suite and hardware design that result in fast time-to-markets.
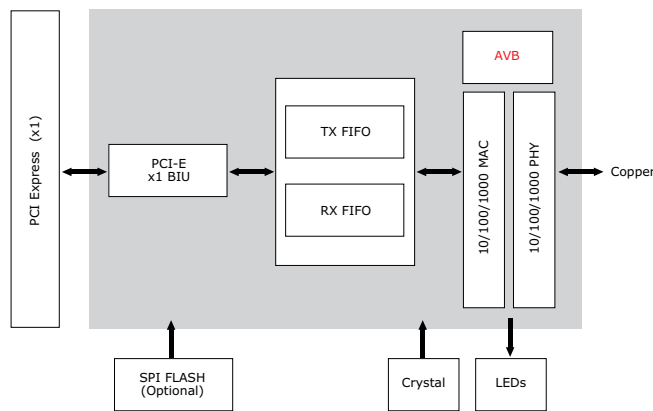
▶ BLOCK DIAGRAM

Fig 1. Yukon 88E8059 Block Diagram

▶ KEY FEATURES AND BENEFITS

FEATURES	BENEFITS

• PCI Express v1.1a compliant:
  - x1 PCI Express Interface
  - 2Gbps bandwidth in each direction on host side
  - Serial bus with differential signaling
	• Seamless interoperability with spec compliant chipsets
	• Supports full Gigabit wire-speed network throughput
	• Low pin-count interface with less routing congestion

• Audio Video Bridging (AVB) support
  - Supports transmission selection algorithm specified in the IEEE 802.1QAV standard
  - Supports both AVB and non-AVB queues
  - Supports priority between non-AVB and low traffic.
	• Enables identification and reservation of network resources for precise isochronous streaming and reliable and quality audio/video transmission over Ethernet
	• Enables guarantees for time-sensitive audio/video traffic for a seamless user experience.

• Lower power modes and advanced power management
  - Active state power management (L0's, L1) support
  - CLKREQ# support
  - PSM
	• Provide smart energy efficient minimum power operation and sleep states
	• Ability to save power and extend battery time when system is operated in battery mode

• Ultra small form factor with low pin count
  - 9mm x9mm, 64 QFN package device
  - 7mm x7mm, 48 QFN package device
	• Minimizes board space, simplifies signal routing and reduces required PCB layers, decreasing overall system costs.
	• Enables low profile NIC implementations.

• Integrated market-leading Marvell Alaska® PHY
  - 10/100/1000BASE-T IEEE 802.3 compliant
  - IEEE 802.3ab auto-negotiation support
	• Provide highly reliable GbE network connectivity
	• Automatically configures to 10, 100, or 1000 Mbps
	• Compatible with existing installed base

• High-performance descriptor architecture
  - Variable length List Elements as descriptors
  - Descriptor pre-fetching
	• Low-latency packet processing
	• Efficient DMA operation with high throughput performance

FEATURES	BENEFITS
• Host offloads - TCP/IP and UDP Checksum offload - TCP segmentation offload/large-send support - Interrupt moderation	• Providing offloading from the host system CPU and Input and Output (I/O) resources to improve application response • Lower CPU utilization
• Jumbo frame support	• Provide high throughput for superior network performance
• Wake on LAN (WOL) power management support - Configurable Wake events - Advanced Power Management, ACPI 2.0 compliant	• System wake-up functionality based on packet recognition for remote management and network administration
• IEEE 802.1Q VLAN support - Support for up to 64 VLANs	• Enables VLANs for network segmentation and security
• Programmable LEDs - Software configurable LED support	• Provide flexibility to display link status, speed and mode of operation
• Advanced Cable Diagnostics - Marvell Virtual Cable Test® (VCT) technology - Cable monitoring and auto-correct	• Enable IT manager to easily pinpoint location of cabling issues through VCT advanced cable diagnostics • Auto-corrects for pair-swaps and two-pair cables on the network side, resulting in plug-and-play operation, reducing support requirements
• Additional integrated functionality - Integrated non volatile memory to store MAC address and configuration data - Integrated termination passives for PHY MDI interface - Fully integrated 1.8V and 1.0V regulator	• Lower external component cost to reduce system cost
• Broadest software driver suite - Microsoft® Windows® 2000, XP, 2003, Vista™, Windows7, Server® 2008 and Vista; Linux; and Novell® NetWare	• Reduces development time for quick time-to market • Support for range of Desktop and Notebook platforms running different Operating Systems
• Single driver concept	• Easy software management with one driver supporting all Marvell Yukon LAN devices

▶ APPLICATIONS

The Marvell Yukon 88E8059 device is designed for PC and embedded applications.

THE MARVELL ADVANTAGE: Marvell chipsets come with complete reference designs which include board layout designs, software, manufacturing diagnostic tools, documentation, and other items to assist customers with product evaluation and production. Marvell's worldwide field application engineers collaborate closely with end customers to develop and deliver new leading-edge products for quick time-to-market. Marvell utilizes world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low-cost total solutions.

ABOUT MARVELL: Marvell is a leader in storage, communications, and consumer silicon solutions. Marvell's diverse product portfolio includes switching, transceiver, communications controller, processor, wireless, power management, and storage solutions that power the entire communications infrastructure, including enterprise, metro, home, storage, and digital entertainment solutions. For more information, visit our Web site at www.marvell.com.

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