

Marvell® Link Street® 88E6390X

11 Port Ethernet Switch with Eight 10/100/1000Mbps PHYs and Two XAUI/RXAUI/2500 Base-X Interfaces

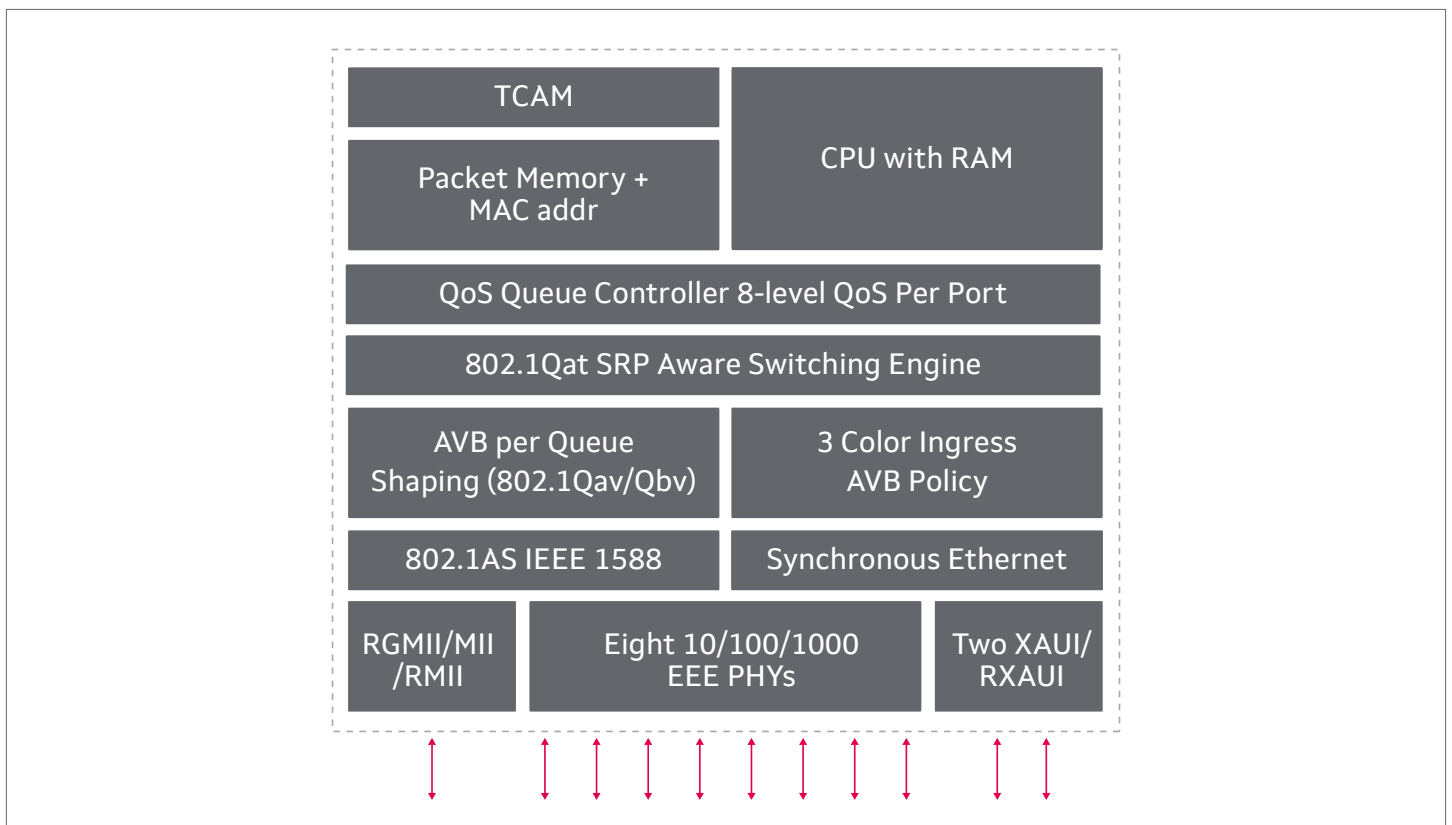
Overview

The Marvell® Link Street® 88E6390X device is single-chip, 11-Port Ethernet Switch with eight integrated 10/100/1000 Mbps Ethernet transceivers and two high speed SerDes interfaces supporting 10Gbps XAUI and RXAUI, 2500-BaseX, 1000Base-X, and SGMII. The device also includes an integrated 200MHz microprocessor with of internal memory to enable smart or lightly managed switches without the need of an external CPU.

The 88E6390X provides advanced QoS features with 8 egress queues. The high performance switch fabric provides line rate switching on all ports simultaneously while providing advanced switch functionality. The device includes a 256 entry TCAM to enable flexible switch policing, including Access Control Lists (ACLs) and Policy Control Lists (PCLs). The 88E6390X also

supports the latest IEEE 802.1 Audio Video Bridging (AVB) and Time Sensitive Networking (TSN) standards. These new standards overcome the latency and bandwidth limitations of Ethernet to allow for the efficient transmission of real-time content for home, commercial, and industrial applications. These devices use the AVB/TSN technologies to identify and reserve the network resources for AVB/TSN traffic streams and supports precise isochronous streaming capability for reliable and quality audio/video transmission over Ethernet for today's real-time, high definition information and entertainment options. The AVB/TSN protocols enable timing sensitive streams (such as digital video, audio, or industrial control traffic) to be sent over the Ethernet network with low latency and robust quality of Service guarantees.

Block Diagram



Key Features

| Features | Benefits |
|--|---|
| High performance, non-blocking, 11-port Ethernet Switch integrating <ul style="list-style-type: none">- Eight 10/100/1000Mbps PHYs with Advanced Virtual Cable Tester (VCT) diagnostic features- Two 10Gbps XAUI/RXAUI Interfaces<ul style="list-style-type: none">· 2.5Gbps/1Gbps also supported- One RGMII/MII/RMII interface | <ul style="list-style-type: none">· Provides a complete Gigabit Ethernet switching solution for SOHO and SMB 8 port switches and routers.· The 10Gbps interfaces provide non-blocking uplink to cascade to higher port count 16 and 24 port switches· Energy Efficient Ethernet PHYs reduce power consumption while VCT provides qualitative cable-plant diagnosis, lowering Opex |
| Integrated microprocessor <ul style="list-style-type: none">- Includes integrated memory <ul style="list-style-type: none">· Supports IEEE 1588v2 one-step PTP· Cut-through switch fabric for low latency applications· Synchronous Ethernet for 1000Base-T or 100Base-TX | <ul style="list-style-type: none">· Enables managed switch designs with the addition of a low cost EEPROM · Advanced timing features support clock synchronization and reduced latency for time sensitive content |
| TCAM | <ul style="list-style-type: none">· Enables intelligent switching and policing of packets by looking beyond Layer 2 packet information |
| Supports 802.1 Audio Video Bridging (AVB) and Time Sensitive Networking (TSN) Standards <ul style="list-style-type: none">- 802.1AS – Precise Timing Protocols- 802.1Qat – Stream Reservation Protocol- 802.1Qav – Egress Pacing and Jitter Shaping- 802.1Qbv – Time Aware Shaping | <ul style="list-style-type: none">· Provides the latency, bandwidth and Quality of Service guarantees required to deliver today's multimedia entertainment and information over the Ethernet network. |
| Quality of Service (QoS) support with 8 traffic classes <ul style="list-style-type: none">- QoS determined by 802.1p, port, Source or Destination MAC address, 802.1Q VLAN ID, Frame Type (e.g., ARP, EtherType, etc.), IPv4 Type of Service (TOS), Differentiated Service (DiffServ), or IPv6 Traffic Class | <ul style="list-style-type: none">· Best in Class QoS features enable prioritization of all types of traffic (e.g. video, voice, data) to ensure efficient use of network bandwidth. Provides guaranteed delivery of time-sensitive Audio/Video content when used in conjunction with AVB standards. |
| Advanced Features <ul style="list-style-type: none">- High performance switch fabric- Supports 10KByte Jumbo Frames- Per port ingress rate limiting and broadcast storm prevention (5 rate limiters per port)- Per port egress rate shaping- 802.1Qbb Priority Flow Control- Two LEDs per port | <ul style="list-style-type: none">· Provides high-speed, non-blocking, Gigabit performance for cost sensitive consumer applications. Advanced rate limiting, egress shaping and storm prevention improve traffic management and network performance, and reduce unwanted flooding of ports.· Glueless interface for up to 20 LEDs (2 per port) including special LED functions, including WAN or LAN link/activity indication by combining the link/activity indication of 1 or more ports to a single LED function. |
| Management and Security <ul style="list-style-type: none">- Supports 802.1Q VLANs- Supports 802.1D/s/w Spanning Tree Protocols- IPv4 IGMP and IPv6 MLD snooping- 802.1x MAC Authentication- Remote (In-band) Management | <ul style="list-style-type: none">· Built-in network management and security features, support fully managed switches and truly isolated WAN vs. LAN firewall applications. The device supports 802.1Q VLAN IDs, which can be enabled on a per port basis.· Three levels of 802.1Q security is supported with error framed trapping and logging. |

Target Applications

The Marvell Link Street-88E63390X is the industry's first true SOHO Ethernet switch chip to support 10Gbps interfaces. The addition of 10Gbps interfaces provides flexibility to support many different non-blocking switch configurations:

Unmanaged/Managed 8, 16, and 24-port Gigabit Switches:

Scalable architecture enables support for non-blocking high performance Gigabit switches with 10 Gigabit uplinks

Smart and Lightly Managed switches: Integrated microprocessor enables lightly managed switches with the addition of an external EEPROM

Industrial Switches: Synchronous Ethernet, IEEE 1588v2, and 802.1 TSN support enable timing critical industrial networks



To deliver the data infrastructure technology that connects the world, we're building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world's leading technology companies for 25 years, we move, store, process and secure the world's data with semiconductor solutions designed for our customers' current needs and future ambitions. Through a process of deep collaboration and transparency, we're ultimately changing the way tomorrow's enterprise, cloud, automotive, and carrier architectures transform—for the better.

Copyright © 2020 Marvell. All rights reserved. Marvell and the Marvell logo are trademarks of Marvell or its affiliates. Please visit www.marvell.com for a complete list of Marvell trademarks. Other names and brands may be claimed as the property of others.

Marvell_88E6390X_PB Revised: 07/20