Switching Solutions

Prestera®-EX126
IPv6-Enabled 12 Gigabit Ethernet Packet Processor
98EX126

PRESTERA®

PRODUCT OVERVIEW

The Marvell® Prestera®-EX family of packet processors delivers multi-layer enterprise switching with exceptional performance and industry-leading features. The Prestera-EX126 product integrates 12 Gigabit Ethernet (GbE) ports and a 16 Gbps uplink bus for uncompromising, non-blocking performance and system scalability. This complete system-on-chip (SoC) device supports line rate IPv6/IPv4 Unicast & Multicast Routing, IP-in-IP Tunneling, L2 Bridging support along with advanced L2-L4 Traffic Classification, Filtering, and Prioritization. The 98EX126 device provides the ideal solution for rapid development of high-port density GbE chassis, stackable and standalone switching systems. The Prestera-EX family provides a complete line of FE, GbE and 10 GbE switching solutions with 100% software compatibility across the product line.

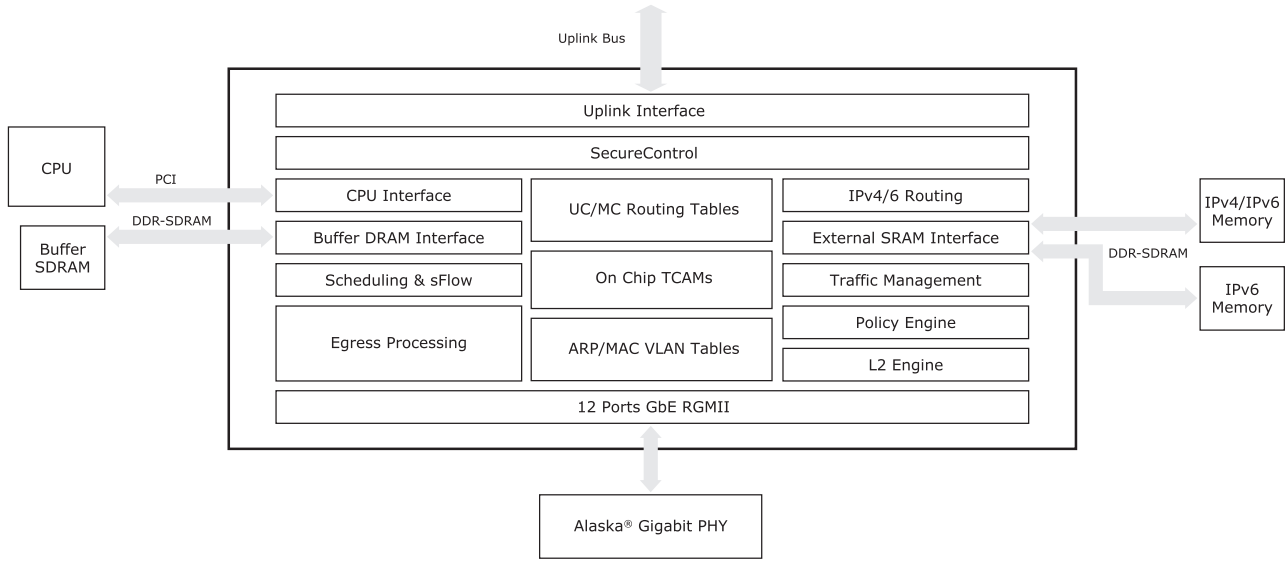

Fig 1. Prestera Packet Processor (98EX126) Block Diagram

SPECIAL FEATURES

- IPv6
  - Line rate IPv6 Unicast routing
  - Line rate IPv6 Multicast routing
  - IP-in-IP tunneling
  - Address scope checking
- Marvell Policy Control Lists
  - On-chip TCAM
  - 48 byte-wide match key with logical offsets
  - Dual Policy lookup with individual actions
  - Comprehensive list of Policy Action Entities
  - Multiple TCAM lookup modes
- SecureControl
  - 8 priority queues for To-CPU & From-CPU packets
  - Advanced scheduling and rate limiting of CPU-bound packets
- Distributed Switching Architecture (DSA)

BENEFITS

- Future-proof networks with hardware support for IPv6
  - Performance for enterprise & service provider deployments
  - Purpose-built for peer-peer & multimedia applications
  - Best-in-class support for IPv6-IPv4 co-existence and migration
  - For Layer 3 forwarding security with line rate performance
- State-of-art security via Packet Classification and Control
  - Provides optimized and deterministic behavior
  - Precise user defined keys, full support for IPv6 rules
  - Granular classification with easier rule table management
  - For granular control over packet forwarding
  - For efficient use of TCAM and increased number of policies
- Enables best-in-class high availability feature set
  - Enables prioritization and control of CPU traffic
  - Prevents Denial of Service attacks on CPU
- Permits design of value line cards and systems with Marvell Prestera DX and Link Street® SOHO devices

MARVELL®

Prestera®-EX126 Packet Processor

MOVING FORWARD FASTER®

FEATURES

BENEFITS

FEATURES	BENEFITS
• Twelve 10/100/1000 Mbps Ethernet ports with RGMII interfaces	• For GbE switching solutions
• High-performance uplink bus	• Enables design of chassis and stackable systems by connecting with Prestera FX family of fabric processors
• Layer 2 MAC, bridging & switching – Up to 16K MAC addresses – 802.1Q based 4K VLANs – Supports 4K Multicast groups – 802.3ad compliant link aggregation – Multicast and Broadcast rate limiting – 802.1s Multiple Spanning Tree – 802.1w Rapid Spanning Tree – 802.1X Port-based access control – Jumbo frame support	• Performance enabled bridging and IEEE standards support – Large MAC table for Scalable Enterprise solutions – Improves VLAN administration and management – For building scalable multicast applications – Up to 31 trunk groups with 8 members in each trunk group – Prevents broadcast storms, improves bandwidth utilization – Enables multiple independent instances of loop-free topologies – Supports enhanced spanning tree convergence algorithms – For MAC-based authentication in mobility aware networks – For server-farms connectivity, large data transfers on uplinks and proprietary data-transfer protocols
• Layer 3 routing – 128-bit longest prefix match – On-chip forwarding table – External SRAM IP subnet table – Multipath Routing (Equal Cost/Weighted Cost) – Pre and post routing exception checks – Multicast RPF checks	• Performance routing – Enhanced performance & flexibility in routing table management – Several thousand IPv6/IPv4 Unicast and Multicast addresses – Scales up to 256K IPv4/IPv6 subnets – Load balancing up to 64 links with Layer 3/Layer 4 information – Increased control over routed packets – Enhanced forwarding security for Multicast packets
• QoS, Traffic Metering/Policing/Conditioning/Scheduling – 8 Priority queues per port with WRED – IETF DiffServ Support – IEEE 802.1p Support – SP/WRR Scheduling per Queue – Policy Based Rate Limit/QoS/CoS Assignment – Single/Double Rate Three Color Marking – Hierarchical Shaping per queue &/or per port	• Exhaustive support for QoS & End-to-End Congestion control – Flexibility in traffic classification and improved TCP performance – Provides end-to-end Layer 3 based Quality of Service delivery – Enables Layer 2 based Quality of Service – For guaranteed delivery of delay sensitive traffic – Set, implement and enforce SLAs per user or application – Provide min/max bandwidth guarantees with tolerances – Adhere to negotiated SLAs for outbound traffic – For management of Service Level agreements from 20 Kbps to 10 Gbps rates
• Advanced Management and Monitoring – BPDU trapping – ARP/RIPv1/IP broadcast trapping – IGMP mirroring/trapping – IPv6 multicast listener discovery – SFlow (RFC 3176)	• For Control Plane Intervention, Forwarding & System Management – For STP/MSTP/RSTP support – Address learning per port and per VLAN – Learning Multicast per port and per VLAN – ICMPv6 message support for IPv6 Multicast – Statistical packet sampling on ingress and egress for network monitoring
• Miscellaneous – Standard PCI CPU management interface – IEEE JTAG support	– Glue-less connection to most CPUs – For simplified board bring up and manufacturing line tests

APPLICATIONS

The Prestera-EX126 switching packet processor delivers optimal switching solutions for a broad range of applications in the enterprise and service provider LAN environment. It enables standalone or stackable Layer 2/3/4 aggregation/work group switches and access routers. It also provides an ideal solution for high-port density line cards for enterprise aggregation and core chassis.

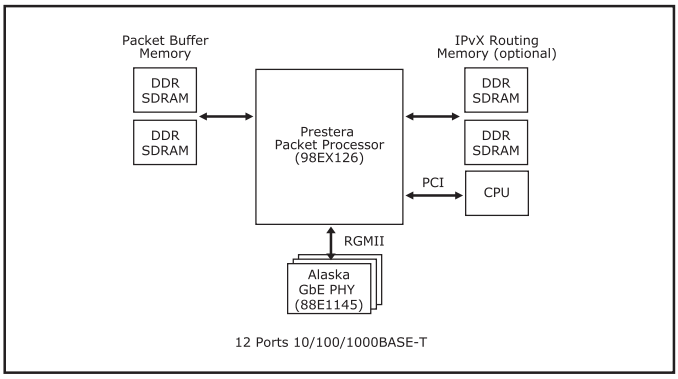

Fig 2. Standalone Diagram

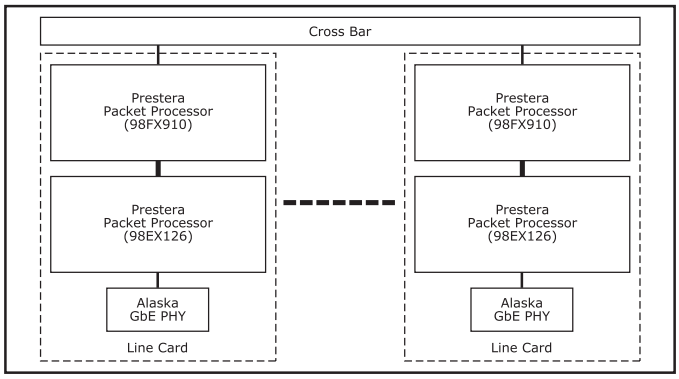

Fig 3. Chassis Diagram

THE MARVELL ADVANTAGE: The Marvell Prestera-EX126 packet 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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98EX126-001 10/04