BROADCOM®

Product Brief

BCM88850
StrataDNX™ 14.4 Tb/s Scalable Switching Device

Overview

The Broadcom® BCM88850 scalable series is the industry's most integrated networking solution, enabling high density 400GbE switching and routing platforms with line rate MACSec and IPSec support.

The BCM88850 is the eight generation of the StrataDNX scalable switching product line and processes up to 14.4 Tb/s of line card traffic, supporting up to 18 400GbE ports, 72 100GbE ports, or a mix of front panel ports from 10GbE to 400GbE, operating at Layer 2 through Layer 4.

The BCM88850 series, together with the BCM88790 fabric element (FE) device, enables system vendors to build a scalable product line based on a unified architecture that addresses any density or application, such as:

- Multi-terabit core and edge routers for data center, packet transport, or carrier network applications
- Large-scale spine and leaf switches for data centers with integrated deep buffering and hierarchical quality-of-service (HQoS)
- Multiple interconnected modular systems to create a scalable core platform for switching and routing capacity multiplication
- High-capacity, fixed configuration switch for mission-critical applications

The BCM88850 Elastic Pipe™ packet processor is C++ programmable, with built-in support for data center and carrier networking applications. The large-on-chip, centralized, and fungible databases can be extended using an external knowledge-based processor (KBP) from Broadcom.

The BCM88850 traffic manager integrates deep packet buffers with a distributed scheduling scheme that allows state-of-the-art hierarchical quality-of-service (QoS), transmission scheduling per-customer, per-service, as well as tunneling and overlay networks. Flexible flow control mechanisms support Priority-based Flow Control (PFC), Enhanced Transmission Selection (ETS), and Explicit Congestion Notification (ECN).

Key Features

- Highly integrated StrataDNX scalable switching and routing device.
- Highly scalable, field proven StrataDNX traffic manager, with deep packet buffers.
- Advanced and programmable packet processor, with built-in support for data center and carrier applications.
- Hardware support for IEEE 1588v2 and SyncE implementations with nanosecond-scale time stamping.
- Large on-chip tables with off-chip expandability.
- 10GbE, 25GbE, 40GbE, 50GbE, 100GbE, and 400GbE interfaces.
- Scaling to over one Peta bits-per-second switching and routing solutions together with the BCM88790.
- MACSec and IPSec support at line rate on all network interfaces

Supported Applications

- Carrier Ethernet core, metro/edge switches, and routers.
- Data center leaf, spine, core, and DCI switches.
- Data center high-capacity, deep-buffered, ToR switches.

Features

- Eight-generation StrataDNX scalable FAP product line
- High-performance 7.2-Tb/s full-duplex switching
- MACSec and IPSec support at line rate over all network interfaces
- Fabric interface:
  - SerDes interface to the Broadcom BCM88790 fabric element
  - Fabric-less (without the fabric element) configurations of up to three devices
  - Flexible network interface:
  - 10GbE, 25GbE, 40GbE, 50GbE, 100GbE, and 400GbE interfaces

- Traffic manager:
  - 8-GB in-package, HBM (High-Bandwidth Memory) deep buffering
  - Carrier-grade hierarchical traffic management
  - Compliant with scheduling and shaping standards, including MEF and DSL-Forum
- Elastic Pipe:
  - Extending BCM88850 pipe using a pool of additional general-purpose stages:
    1. Future-proof and programmable pipe with elastic extension
    2. Software-defined, C++ programmable
    3. Flexible binding of a centralized database to any stage of the pipe

- Bridging, routing, MPLS, VPLS, L2VPNs, L3VPNs, segment routing, and OAM
- Data center tunneling encapsulations including VxLAN, NV-GRE, and GENEVE
- Built-in support for data center, carrier, and Metro Ethernet, and packet transport applications
- Large on-chip tables with off-chip expandability
- OAM accelerator engine
- Instrumentation and Telemetry:
  - On-chip, large-scale hardware acceleration
  - Monitoring of large numbers of sessions, with advanced reporting capabilities

Figure 1: BCM88850 Block Diagram
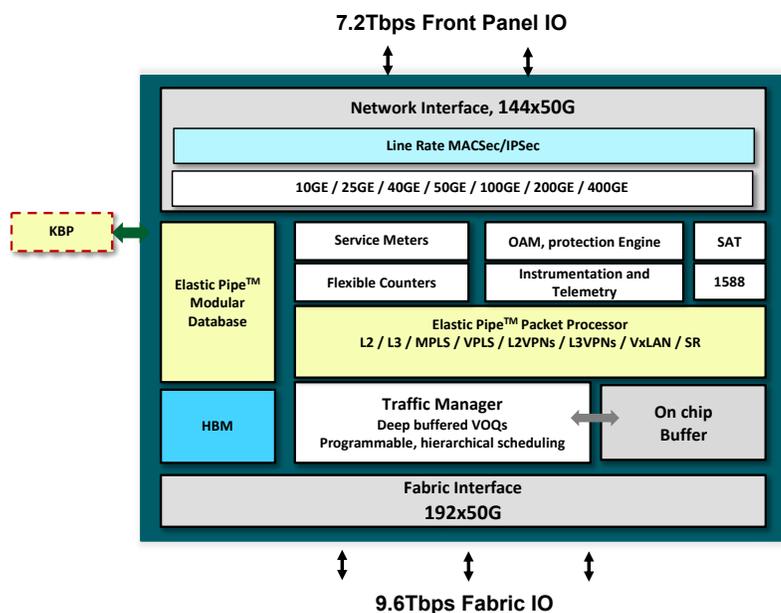
To meet customer-specific requirements, the BCM88850 can be used with complementary Broadcom devices for interface expansion, scaling, and adding traffic management capabilities to existing systems for investment protection.