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BCM56580
PRODUCT Brief

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16 × 2.5 GbE + 4 × 10 GbE ETHERNET MULTILAYER SWITCH

FEATURES

- **16 × 2.5-GbE/1-GbE and 4 × 10-GbE/2.5-GbE/1-GbE ports**
- **Based on StrataXGS® field-proven, robust architecture**
- **Integrated high-performance SerDes**
  - Integrated XAUI™ SerDes for all 10-GbE ports
  - Integrated single-lane SerDes for all 2.5-GbE ports
- **80-Gbps switching capacity at line rate**
- **Support for eight classes of service (CoS) per port**
- **Support for Deficit Round Robin, Weighted Round Robin, and Strict priority scheduling**
- **Support for a cut-through switching mode**
- **Port trunking and remote mirroring support**
- **Fully integrated data and address memory on a single chip**
- **Advanced packet flow control**
  - Head of line blocking prevention
  - Full-duplex flow control (802.3x)
- **ContentAware™ network processing per port**
  - Line rate multifield packet classification
  - Supports IEEE 802.1p, TOS/DiffServ, rate limiting, policing, priority tagging, and remapping
  - Extended security and ACL filtering
- **Full IPv6 routing support**
- **Enhanced security and management capabilities**
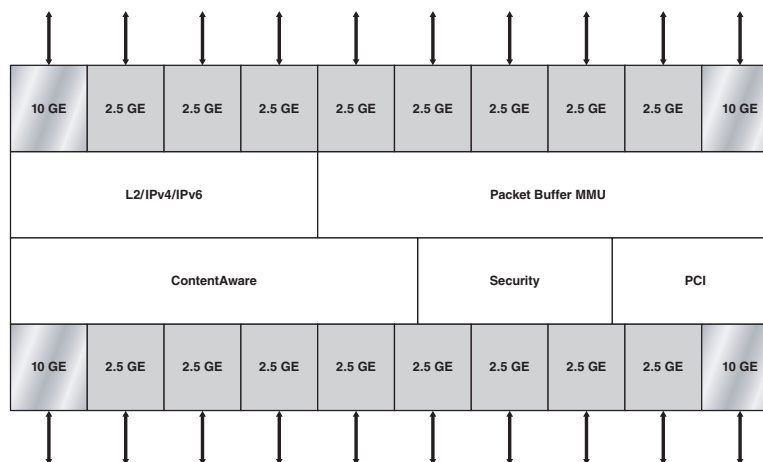- **Low power consumption**

SUMMARY OF BENEFITS

- **High level of integration and low power consumption enable system vendors to build high-performance, high-port density 2.5-Gigabit Ethernet switches using the same system components used in existing GbE solutions.**
- **Built-in high-speed serial interfaces with integrated memory ease and accelerate system design, while reducing cost and conserving board space.**
- **Built-in Layer 3 routing support enables embedded switch to become an extension of the enterprise core network.**
- **Advanced load balancing and strong user isolation features facilitate the implementation of utility computing services.**
- **Integrated security features and enhanced management capabilities improve network reliability and lower cost of ownership for BCM56580-based solutions.**
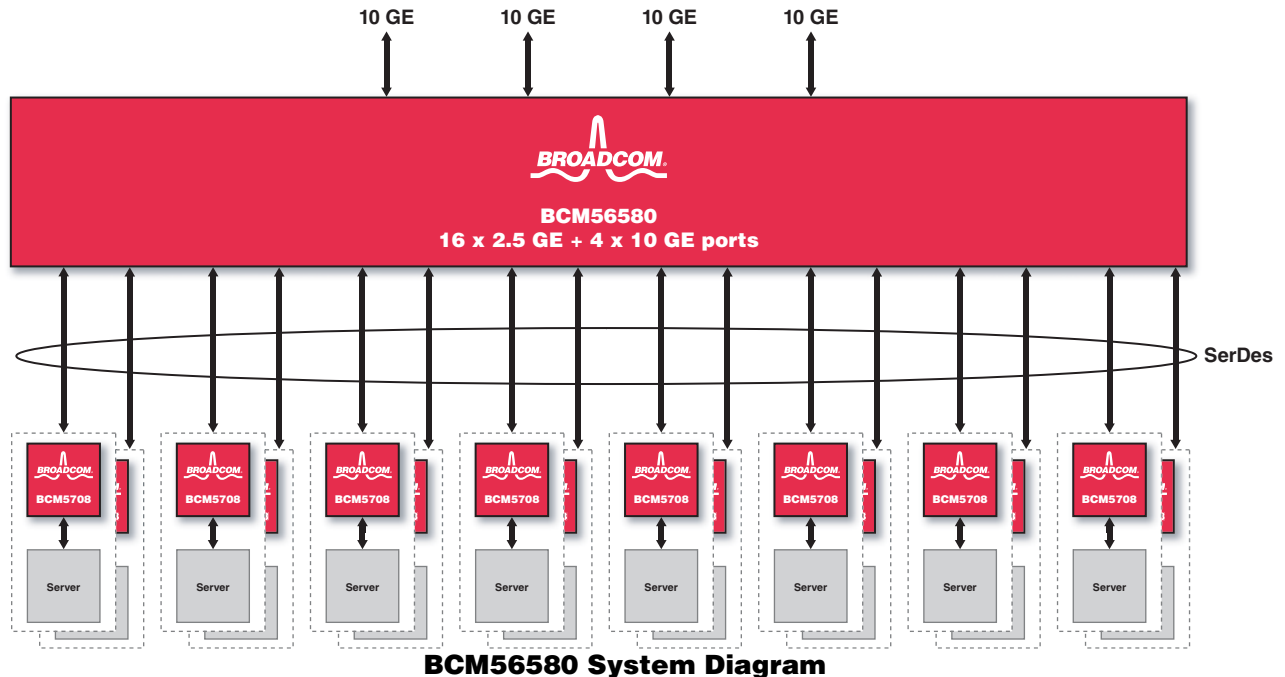- **Broadcom switch API compatibility enables software reuse and faster time-to-market.**

APPLICATIONS

- **Embedded switch in next-generation 2.5 GbE Blade Servers**
- **2.5 GbE/1 GbE switching engine in advanced TCA chassis platforms**
- **Embedded switch to enhance performance of existing Gigabit Ethernet Blade Servers or advanced TCA chassis**

BCM56580 Block Diagram

10 GE	2.5 GE	2.5 GE	2.5 GE	2.5 GE	2.5 GE	2.5 GE	2.5 GE	2.5 GE	10 GE
L2/IPv4/IPv6				Packet Buffer MMU					
ContentAware						Security		PCI	
10 GE	2.5 GE	2.5 GE	2.5 GE	2.5 GE	2.5 GE	2.5 GE	2.5 GE	2.5 GE	10 GE

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10 GE   **10 GE**   **10 GE**   **10 GE**

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BCM56580
16 x 2.5 GE + 4 x 10 GE ports

SerDes

BCM5708   BCM5708   BCM5708   BCM5708   BCM5708   BCM5708   BCM5708   BCM5708

Server   Server   Server   Server   Server   Server   Server   Server

BCM56580 System Diagram

The BCM56580 network switch is a high-density, 2.5-Gigabit Ethernet switching chip solution with 20 ports. Additionally, the BCM56580 integrates all the SerDes required to interface to applicable copper and fiber physical interfaces. The integrated SerDes functionality includes 10-Gbps XAUI interfaces and 2.5/1-Gbps SGMII PHY interfaces. The integrated SerDes complies with the CX-4 standard and PICMG3.1 standard, which ensures interoperability with Ethernet line cards in an advanced TCA chassis.

With 80 Gbps of aggregate switching bandwidth, BCM56580 represents a high level of Ethernet switching integration that enables embedded switching vendors to extend the life of their existing GbE system designs by providing a performance upgrade using the same physical enclosures and backplanes. This ability has many benefits, including reducing the vendor development cost and creating additional value in current generation systems through upgradability.

The BCM56580's low power dissipation simplifies board design and optimizes vendor board space.

The advanced ContentAware engine supports ToS/DiffServ, policy-based routing, priority tagging, and remapping. The advanced packet filtering and classification functions of the BCM56580 make it ideal for Utility computing applications, where user segregation and network security is critical.

In addition, the BCM56580 provides advanced security features that improve network resiliency and reliability. Moreover, the BCM56580

features advanced load balancing functionality that uses flow information to provide high-percentage link utilization.

The BCM56580 supports L2 switching with 4K VLANs, IPv4 and IPv6 full routing functionality, enabling it to become a direct extension of the enterprise network. This provides additional value to customers by eliminating the hardware and management cost of having intermediate routers.

As the latest member of the StrataXGS switch family, the BCM56580 Software Development Kit preserves software continuity with Gigabit Ethernet switches, reducing development cost and shortening the product time-to-market.

The BCM56580 implements congestion handling features such as Head-Of-Line blocking prevention and IEEE 802.3x flow control.

In addition to a 32-bit PCI interface used to communicate with a local CPU, the BCM56580 supports an I^2C controller for communicating with external devices such as serial EEPROM, flash memories, and parallel port devices.

The BCM56580 relies on Broadcom's modular switching architecture to provide intelligent packet processing, network security, and enhanced manageability at a low cost. The BCM56580 is an ideal solution for next-generation, high-speed, embedded switching applications, such as Blade Servers and advanced TCA chassis platforms.

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