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BCM5841 PRODUCT Brief

MULTI-GIGABIT SECURITY PROCESSOR

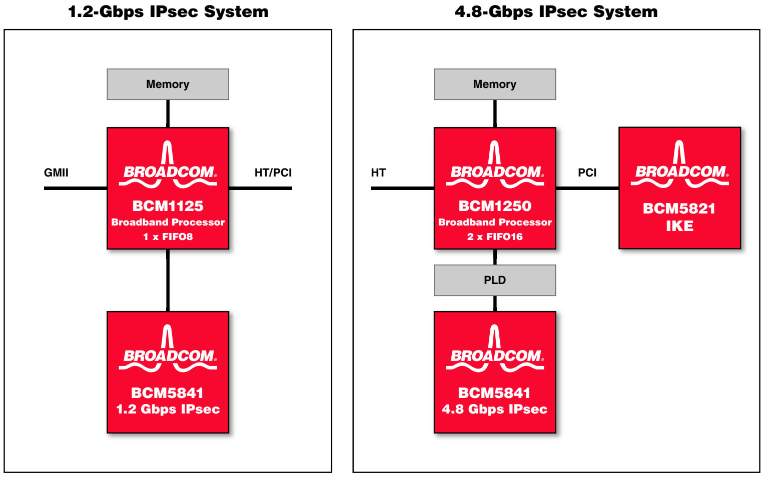
FEATURES

- **World's fastest IPsec security processor**
  - 4.8-Gbps IPsec acceleration
  - AES-CBC and AES-CTR modes
  - AH and ESP support
- **Multiple performance grades**
  - **BCM5841**-1: 4.8 Gbps
  - **BCM5841**-2: 2.4 Gbps
  - **BCM5841**-3: 1.2 Gbps
  - **BCM5841**-4: 0.6 Gbps
- **Sustainable performance on real-world traffic**
  - 4.8 Gbps on small packets
  - 4.8 Gbps on multiple or single flows
- **Compatibility across BCM584X product family**
  - Forward and backward compatible architectures
  - Common BCM584X API
- **Flexible interfaces**
  - POS-PHY level 3
  - FIFO interface
- **Support for unlimited SAs via in-band keying**
- **Package options**
  - 256-TBGA (27∞27 mm)
  - 256-FPBGA (17∞17 mm)

SUMMARY OF BENEFITS

- **Multiple BCM5841 performance versions offers flexibility**
  - Common IPsec solution across multiple platforms
  - Power consumption scales with performance
- **BCM584X common API protects software investment**
  - Leverage software across platforms
  - Easily migrate from previous generation solution
  - Future proof with next generation compatibility
- **Flexible interfaces minimize size and power requirements**
  - Seamless FIFO interface to Broadcom's broadband processors (BCM1250 and BCM1125)
  - POS-PHY L3 interface for backward compatibility
- **Highest performance security processor enables security in high-bandwidth applications**
  - Enterprise routers
  - Edge and core routers
  - Layer 3+ switches
  - Access concentration
  - VPN appliances
  - Firewalls
- **No performance degradation for small packets**
  - Ensures highest performance in realistic conditions
  - 3DES-CBC, AES-CBC, new SA per packet

VPN Applications Using the BCM5841



1.2-Gbps IPsec System

4.8-Gbps IPsec System

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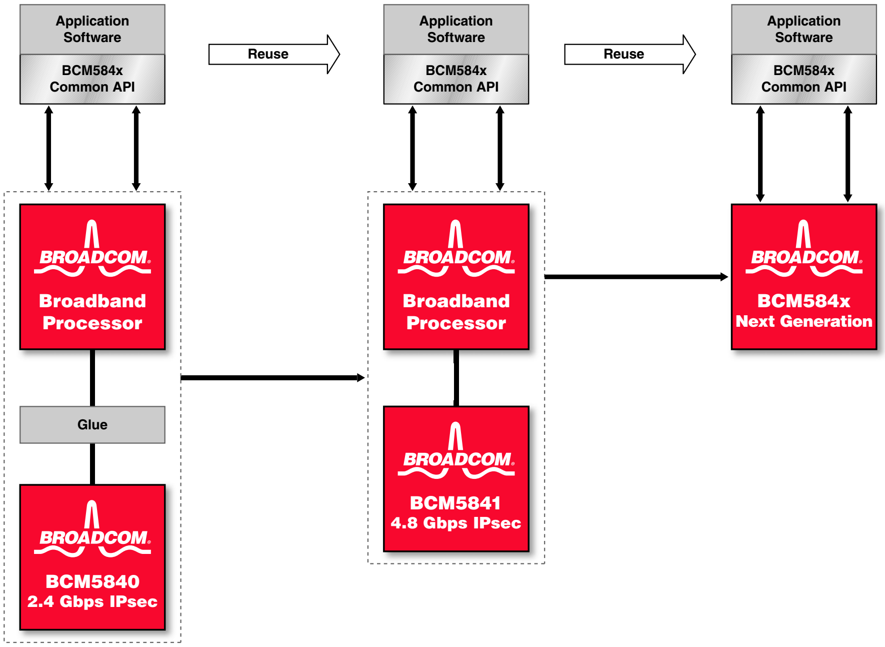
OVERVIEW



Broadcom BCM584X Common API

The Broadcom BCM5841 is a follow-up to the BCM5840, the world's first single-chip Gigabit security processor. Offering increased performance, additional functionality, and more flexible interfaces, the BCM5841 is the most versatile, highest performance IPsec processor in the world. The BCM5841 is software and mode-compatible with the BCM5840 processor, thus protecting the software investment of Broadcom's current BCM5840 customers.

Flexible enough to span multiple applications and address a variety of throughput requirements, the BCM5841 is available in four different versions. The various versions of the BCM5841 are 600 Mbps, 1.2 Gbps, 2.4 Gbps, and 4.8 Gbps. Such versatility allows customers to address an entire product line's security requirements with a common security solution in a cost-effective manner.

The BCM5841 architecture provides backward and forward compatibility with Broadcom's BCM5840 Gigabit processor and the next-generation multi-gigabit solution. Furthermore, migration from the BCM5840 or BCM5841 to Broadcom's next-generation solutions is simplified through a common software API.

Broadcom's BCM584X common API protects customers' software investments while providing the flexibility to migrate to higher performance, and more highly-integrated, next-generation solutions. This common API allows customers to migrate from previous generations to current generations to future generations, while eliminating the impact on their existing software.

The BCM5841 is able to sustain throughputs of 4.8 Gbps for IPsec encryption and authentication, regardless of packet size. The innovative BCM5841 sustains multi-gigabit performance for 3DES-CBC/AES-CBC and HMAC-SHA-1/HMAC-MD5 IPsec processing.

Flexible enough to work in most applications, the BCM5841 utilizes a POS-PHY level 3 interface with the ability to seamlessly interact with Broadcom's family of broadband processors (BCM1250, BCM1125) via the FIFO interfaces of the NPU.

The BCM5841 is optimized to function as an IPsec coprocessor that offloads computationally demanding cryptographic operations from a host protocol processor. Typical applications might utilize a network processor (NPU) to perform the IPsec protocol processing, including Security Policy Database (SPD) lookup, header encapsulation and de-encapsulation, security association lookup/update, and forwarding to the BCM5841.

Applications requiring FIPS140-1 level 2 or 3 can benefit from the ability of the BCM5841's ability to handle encrypted security associations. External security associations can be stored encrypted in a secure manner and forwarded to the BCM5841 for processing without any performance penalties.

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