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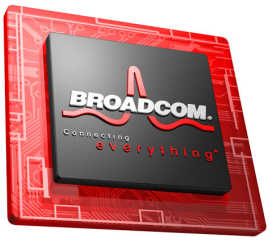
BCM5836P PRODUCT Brief



FLEXIBLE COMMUNICATIONS PROCESSOR WITH INTEGRATED SECURITY

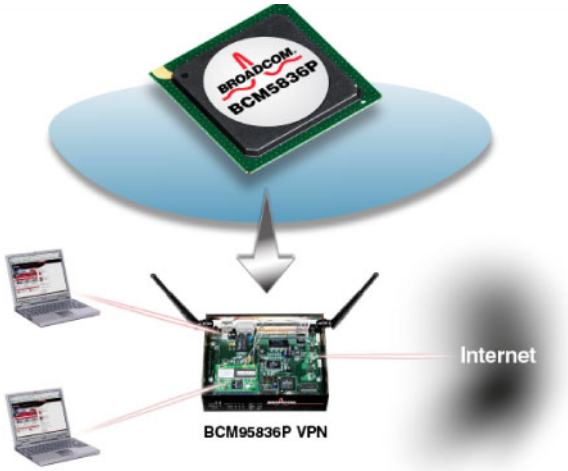
FEATURES

- **Highly flexible processor with integrated security ideally suited for residential and small-to-medium business applications**
- **Advanced 300 DMIPS/264-MHz MIPS32™ core, perfect for SOHO VPN enabled routers, SMB routers and switches, residential gateways, wireless access points, and VPN firewall appliances**
  - 16-KB I-cache, 16-KB D-cache, and 1-KB prefetch cache
  - MMU/TLB RTOS support for Linux®, VxWorks®, and Windows® CE.NET
- **Integrated hardware acceleration of popular cryptography algorithms (3DES, AES, DES, SHA-1, and MD5)**
- **Capable of high-speed Ethernet routing while hosting IEEE 802.11a/b/g interfaces**
- **10/100 Ethernet MAC with MII for WAN connectivity**
- **10/100 Ethernet MAC with MII for LAN connectivity**
- **V.92 codec, audio codec, IR, and GPIO interfaces for data/fax/voice modem**
- **SDRAM controller**
  - 32-bit/133-MHz SDRAM controller
  - PC133-compliant SDR and DDR supported
  - 8 MB to 512 MB capacity
- **16-bit external bus interface supports PCMCIA, Flash, and IDE**
- **Dual 16550 compatible UART interfaces**
- **0.13µ low-power 1.25/2.5/3.3V design**

SUMMARY OF BENEFITS

- **Versatile single-chip processor with integrated security features ideal for applications requiring security**
  - VPN-enabled SOHO routers
  - VPN-enabled gateway solutions
  - Wireless access points
  - Access devices
  - VPN firewall appliances
- **BCM5836P features a 264-MHz MIPS™ core, high performance PCI interface, USB 1.1, two 10/100 Ethernet MACs, and an Ipsec-enabled core to accelerate computation-intensive cryptography and authentication algorithms**
- **Complete solution provides quick time-to-market**
  - Extensive embedded software development kit
    - Software support for Linux
    - Production quality router and AP reference code
    - 5836P supports concurrent bridging of IEEE 802.11b, 802.11™, and support for IEEE 802.11 requirements worldwide
    - Complete Ipsec implementation for Linux 2.4.22 via FreeS/WAN and Linux 2.0, 2.2, 2.4, and 2.6 kernels via Openswan
  - Complete HW reference design: BCM95836P reference design
- **Lowest system cost and lowest complexity**
  - Single die processor with integrated security provides headroom for customer-defined applications
  - Processor supports concurrent bridging for integrated high-performance 2.4-GHz radio, 802.11a/g baseband processor, medium access controller (MAC), and other radio components
- **Capable of hosting two USB 1.1 compliant devices (integrated 2-port hub), allowing platform expansion by end users and can implement USB print server functionality**

Application Diagram



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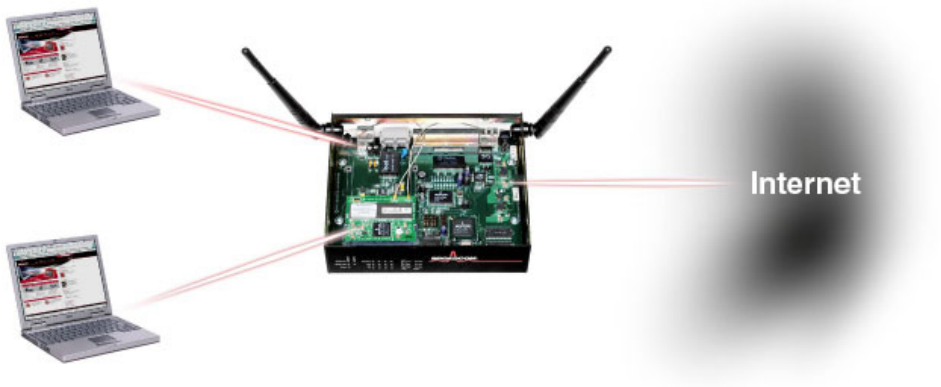
OVERVIEW



Application Diagram

The BCM5836P processor is a flexible, low-power, single-chip processor that integrates the most requested security features with wire-speed performance, interfaces, and processing headroom to meet robust applications such as SOHO routers, SMB routers and switches, residential gateways, wireless access points, and VPN firewall appliances.

The BCM5836P integrates an advanced, custom 264-MHz MIPS32 processor core, two 10/100 Ethernet MACs, and a high-performance SDRAM controller capable of operating at 133 MHz with either Double Data Rate (DDR) or Single Data Rate (SDR) SDRAM. For advanced security, the BCM5836P integrates an on-chip IPSec acceleration engine that can deliver up to 75 Mbps of single-pass AES/3DES encryption throughput and supports a broad range of industry-standard security features such as symmetric-key encryption and authentication algorithms including the latest 256-bit Advanced Encryption Standard (AES), Digital Encryption Standard (DES), 3DES, SHA-1, MD5, HMAC-SHA1, and HMAC-MD5. These features make this processor an obvious choice for SOHO/SMB networking customers who need both high bandwidth performance and advanced security features such as encryption and user authentication.

The BCM5836P is capable of wire-speed Ethernet routing/bridging and possesses two-way set of associative 16-KB instruction cache, 16-KB data cache, and 1-KB prefetch cache. In addition to all MIPS instructions, the BCM5836P provides extra instructions that allow optimization of DSP algorithms for communications, audio, and video applications. An integrated MMU with a 32-entry TLB allows support of multithreaded operating systems such as standard distribution Linux operating system. The V.92 data/fax/voice modem interfaces to an external serial modem codec. The two 10/100 Ethernet MACs provide fail-over redundancy for interfacing to a switch device or wireless product. The PCI interface can also be used as a higher bandwidth interface in addition to the two MACs.

The BCM5836P provides simultaneous PCI 2.3 host interface, external interface bus, and USB 1.1 host/device interface operation for adding application specific devices such as Broadcom's wireless processors. The PCI 2.3 host interface allows enumeration of three external PCI devices (more can be enumerated with an external arbiter) for platform expansion. The EBI allows expansion of up to four devices without external address decode.

In summary, the BCM5836P 32-bit integrated processor is a flexible, low-power system-on-a-chip that is ideal for networking applications requiring security functionality. The BCM5836P features an integrated VPN hardware accelerator that is optimized for SOHO/SMB networked products.

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