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BCM4780P
PRODUCT Brief

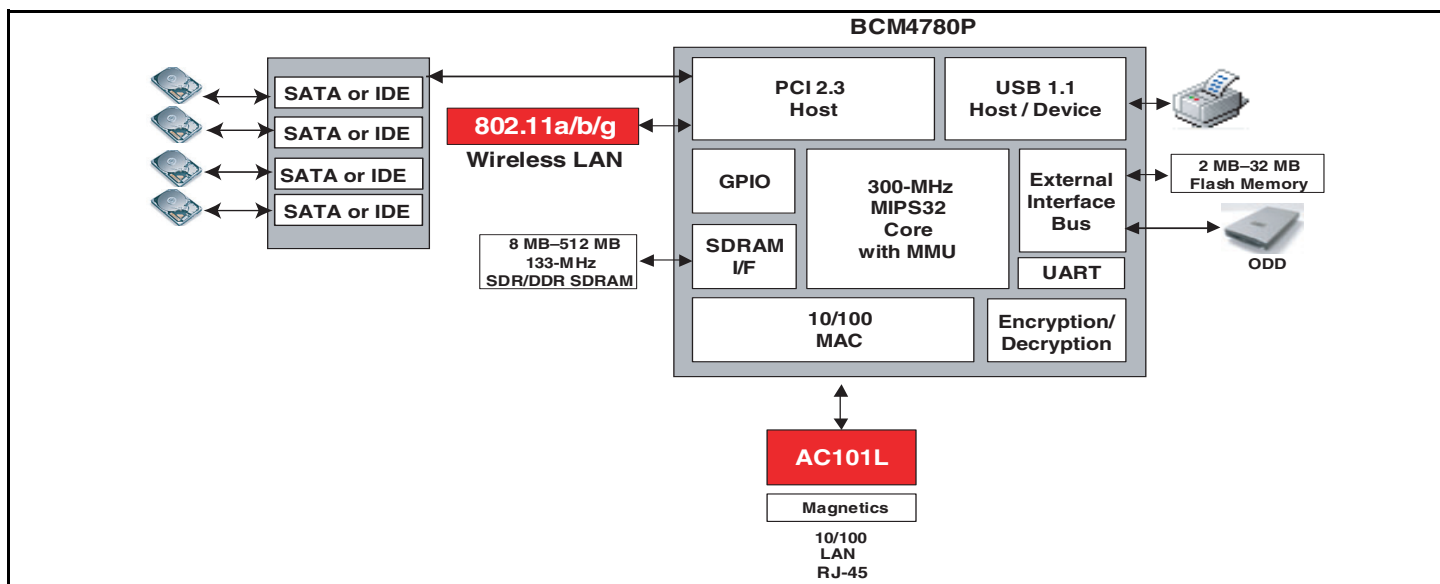# NASOC™ NETWORK ATTACHED STORAGE PROCESSOR

FEATURES

- **Advanced 400 DMIPS / 300 MHz MIPS32™ CPU core**
  - 16 KB I-cache, 16 KB D-cache, and 1 KB prefetch cache
  - MMU/TLB Support for Linux®
- **10/100 Ethernet MAC with MII for LAN connectivity**
- **PCI 2.3 host interface (32 bit / 33 MHz)**
- **12 Mbps USB 1.1 host and device interface**
- **GPIO interface**
- **SDRAM controller**
  - 32 bit / 133 MHz SDRAM controller
  - SDR and DDR support
  - 8 MB to 512 MB capacity
- **Encryption/Decryption block**
  - 3DES-CBC, DES-CBC
  - AES-CBC, AES-CTR with 128, 192, and 256 bit keys
  - MD5, SHA1, HMAC-MD5, HMAC-SHA1
  - SSL-MAC-MD5, SSL-MAC-SHA1, TLS-MAC-MD5, TLS-MAC-SHA1
- **16-bit external interface bus**
- **Dual 16550 compatible UART**
- **0.13μ low-power 1/2/3.3V design**
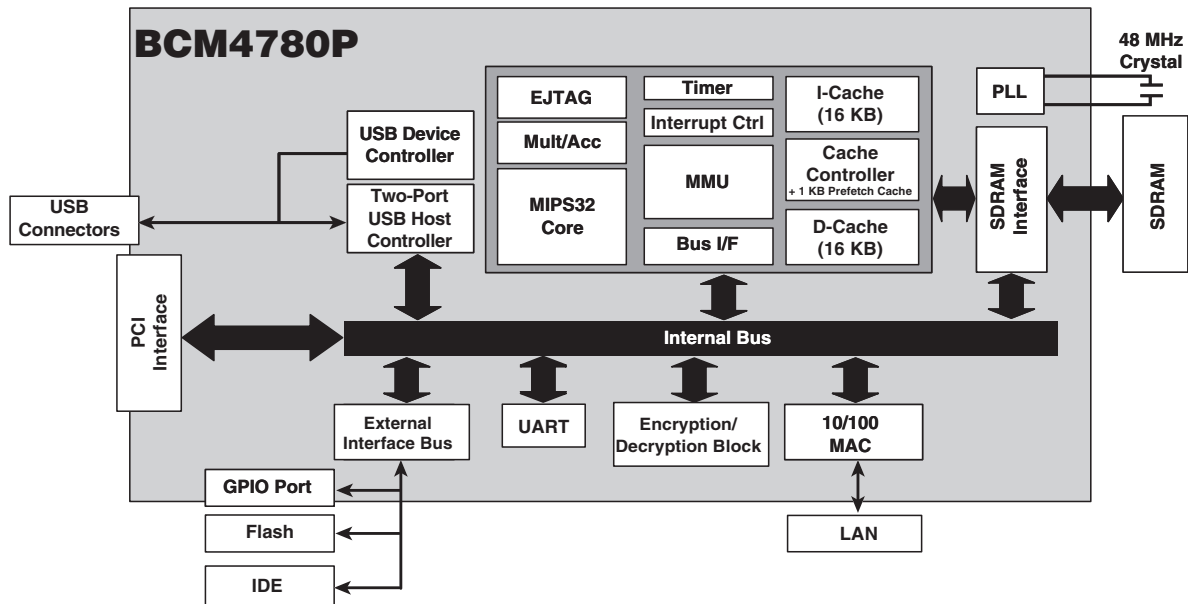
SUMMARY OF BENEFITS

- **Turnkey software and hardware provide the following benefits**
  - Plug-and-Play
  - Auto-discovery
  - User-transparent TwinCopy™ RAID1 technology
  - Stressless Hot-Swap, Online-Build, Online-Merge, Online-Repair
  - Real-time encryption ensures data confidentiality
  - Simultaneous NFS/CIFS support
  - Simultaneous Wired & Wireless LAN accesses
  - Advanced QoS supports media playback/record
  - High-level RAID0,1,10 independent of drive types
  - Powerful volume management features
  - Simple yet advanced File Access Control (ACL)
  - Advanced journaling file system
  - S.M.A.R.T. monitoring and report
  - 12 Mbps USB 1.1 compliant host/device interface enables expansion for Print Server, USB drives for seamless upgrade of hard disks & backup, UPS

BCM4780P System Diagram

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BCM4780P Block Diagram

BCM4780P Block Diagram

The Broadcom NASoC **BCM4780P** processor is a high-performance, low-power chip designed for entry-level NAS products.

The **BCM4780P** has an advanced custom 400 DMIPS / 300 MHz MIPS32™ core with a 2-way set associative 16 KB instruction cache, a 16 KB data cache, a 1 KB prefetch cache, and a 10/100 Ethernet MAC. An integrated MMU with a 32-entry TLB allows support of multi-threaded operating systems such as standard distribution Linux.

The **BCM4780P** provides simultaneous PCI 2.3 host interface, expansion host interface, and USB 1.1 host/device interface operation for adding application-specific peripherals - including Broadcom's BCM4309 IEEE 802.11a/g dual-band processor, the BCM4306 IEEE 802.11g processor, the BCM4301 IEEE 802.11b processor, and an external ATA/SATA controller.

The PCI 2.3 host interface allows enumeration of three external PCI peripherals (or more, with an external arbiter) for platform expansion. The external interface bus allows expansion of up to four devices without external address decoding. The **BCM4780P** is capable of hosting two USB 1.1 compliant devices (a two port hub is integrated), allowing platform expansion by end users, and it has USB print server functionality integrated. In addition, the USB interface can be configured as a USB device (instead of as a host) to support applications where the BCM4780P-based system is added to legacy systems.

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