

IP7100 Network Processor Family

IP7100 Family

The Ubicom IP7100 network processor family enables a broad range of networking applications that require up to 1 Gbps of system level performance. The applications include consumer wireless routers, VPN security routers, SMB UTM routers, broadband triple-play gateways, cellular and Wimax base stations, NAS devices, and 802.11 access points. Based on the UBICOM32 multithreaded architecture, the network processor employs 12 thread-CPU's (tCPU's) and an advanced instruction set that has been optimized for networking applications.



The unique architecture and on-chip hardware engines enable the processor to service various network processing tasks simultaneously without sacrificing line rate performance or Quality of Service (QoS). With core power consumption in the range of 0.5W for routing applications, the IP71xx network processor family offers high performance and low power CPU with extremely low price points.

Key Features

Unique CPU Architecture

The UBICOM32 architecture can schedule multiple tCPU's to execute in parallel which results in very high CPU utilization and 2x more performance against traditional RISC based architectures. The instruction set features an advanced memory-to-memory architecture that is highly optimized for packet processing and yields 30% performance improvements over competing architectures.

High Performance I/O

The processor family features high performance I/O interfaces which support numerous industry standard networking interfaces including 2 RGMII/TMII/MII interfaces, PCI up to 66 Mhz, SDIO, T1/E1, SLIC for VoIP applications, USB 2.0, UARTs, SPI, I2C, and other serial interfaces. The processor also incorporates a programmable I/O subsystem that allows developers to design a variety of programmable hardware controllers such as LCD controller.

Programmable Accelerators

The unique CPU architecture allows developers to design specialized data plane accelerators by utilizing a combination of dedicated hardware engines, fast singlecycle SRAM and one or more tCPU's.

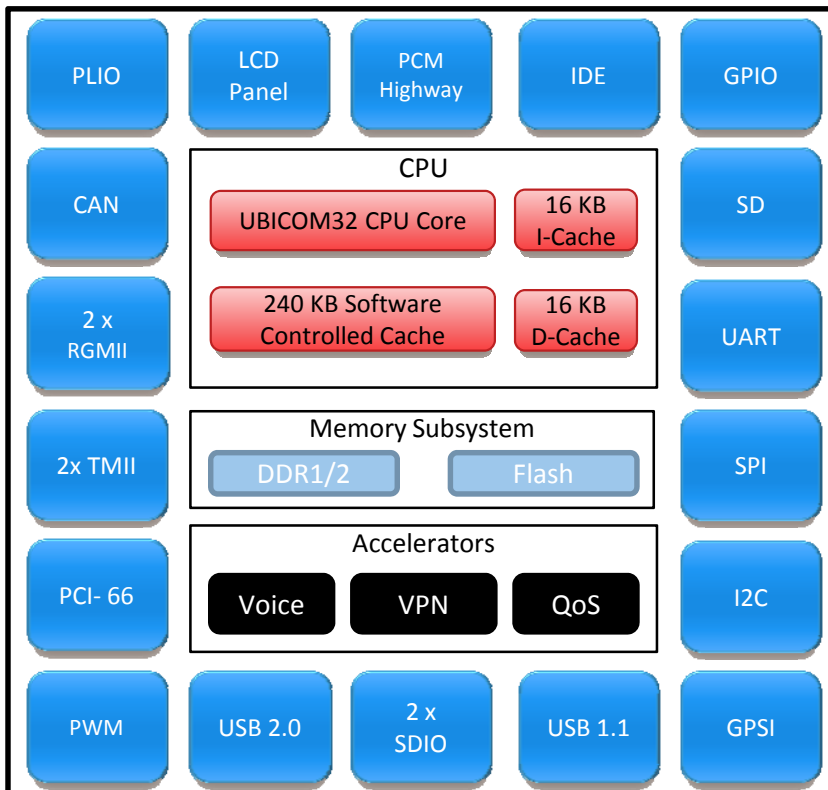
Security Engine

The processor includes a dedicated hardware security block and true random number generator capable of obtaining 80 Mbps of IPsec VPN Performance. The security engine is able to process AES up to 256 bit, DES, 3DES, SHA-1, and MD5.

Product	Applications	Max. CPU Clock
IP7160	Enterprise security and Wireless base stations	550 MHz
IP7150	Broadband Gateways and SMB Security Routers	500 MHz
IP7140	Consumer Routers and NAS Devices	400 MHz



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Programmable Accelerators

- ▶ Provides specialized data plane functions such as QoS, Voice Codec, and Deep packet inspection

Security Engine

- ▶ 80 Mbps IPsec VPN

Packaging

- ▶ 256 ball PBGA, 14 x 14 mm package, 0.8 mm ball pitch
- ▶ Available in commercial (0-70C) and industrial (-40 to 85C) temperature ranges
- ▶ All processors within the IP7100 family are pin-for-pin compatible enabling multiple price-performance points from a single board design and layout

Other

- ▶ Reference designs available

IP7100 Network Processor Family Features

Ubicom32™ 32-bit Processor Core

- ▶ Up to 550 MHz
- ▶ 12 tCPUs
- ▶ 16KB instruction and 16 KB data caches
- ▶ 240KB single-cycle on-chip SRAM for high performance accesses
- ▶ Nominal core voltage of 1.0 or 1.23V
- ▶ 16-bit DDR1 or DDR2 SDRAM I/O
- ▶ 3.3V Standard I/O
- ▶ Watchdog timer

High Performance I/O

- ▶ 2x RGMII/TMII/MII
- ▶ TDM Interfaces
 - Up to 4 x T1/E1
 - Up to 2 x SLIC/DAA
- ▶ PCI, 32-bit 66 Mhz
- ▶ USB 2.0 OTG controller with PHY
- ▶ 2 x SDIO
- ▶ Serial Flash controller
- ▶ Serial Interfaces (SPI, UART, USB 1.1, GPSI)
- ▶ PLIO (Programmable I/O Block)

