CENTAUR Integrated Multi-Port Gateway Solutions

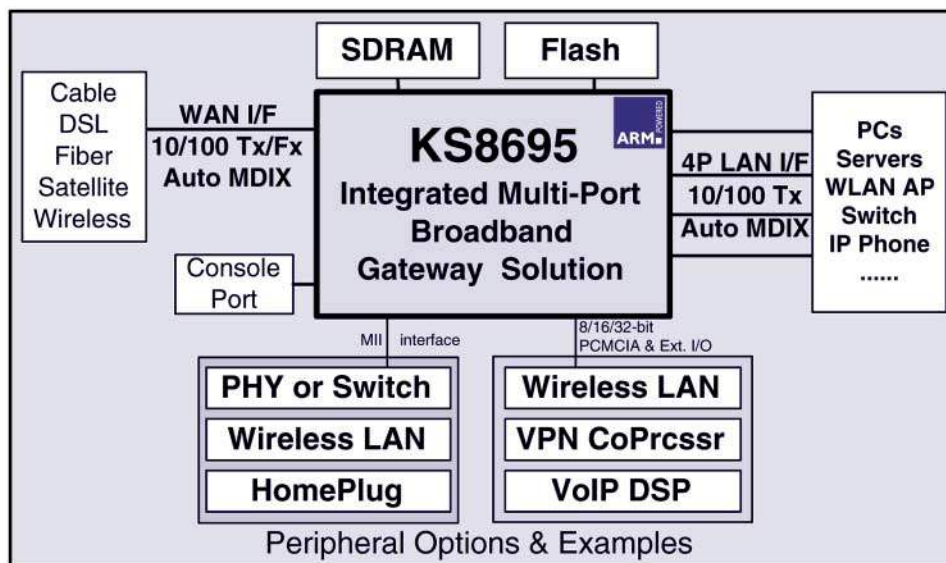The KS8695 "Multi-Port Gateway-on-a-Chip" delivers a new level of networking integration and performance for speeding broadband gateway development. The key components integrated in the KS8695 include:

- Integrated layer-2 managed switch with five Fast Ethernet transceivers and patented mixed-signal low-power technology; five MAC units; a high-speed non-blocking switch fabric; a dedicated address look-up engine; an on-chip frame buffer memory and LED controls. One port is partitioned for WAN interface with the other 4 ports for LAN access.
- A 185-MIPS ARM 922T processor with memory management unit (MMU) and 8kB I-cache and 8kB D-cache.
- An independent MAC unit supporting MAC or PHY mode MII interface for networking expansion.

- On checksum errors and TCP/UDP/IP packet header checksum generation. The protocol engine applies to the WAN, LAN and EMAC interfaces.
- DMA engines with burst mode support; Tx and Rx FIFOs to streamline the data transfers between WAN and CPU, CPU and LAN, CPU and EMAC.
- Shared programmable 8/16/32-bit data bus and 22-bit address bus with up to 64MB total memory space for SDRAM, ROM, Flash, SRAM and all peripheral devices.
- Other peripheral support logic including GPIO, a watchdog timer, an interrupt controller and a JTAG debugging interface.

Complete hardware & software reference designs are available.

The KS8695 represents a new level of total solution optimized for broadband gateway system development and renders speedy routing performance & connectivity interfaces for value-added networking expansions.

Block Diagram

Peripheral Options & Examples

XceleRouter is a trademark of Micrel, Inc.
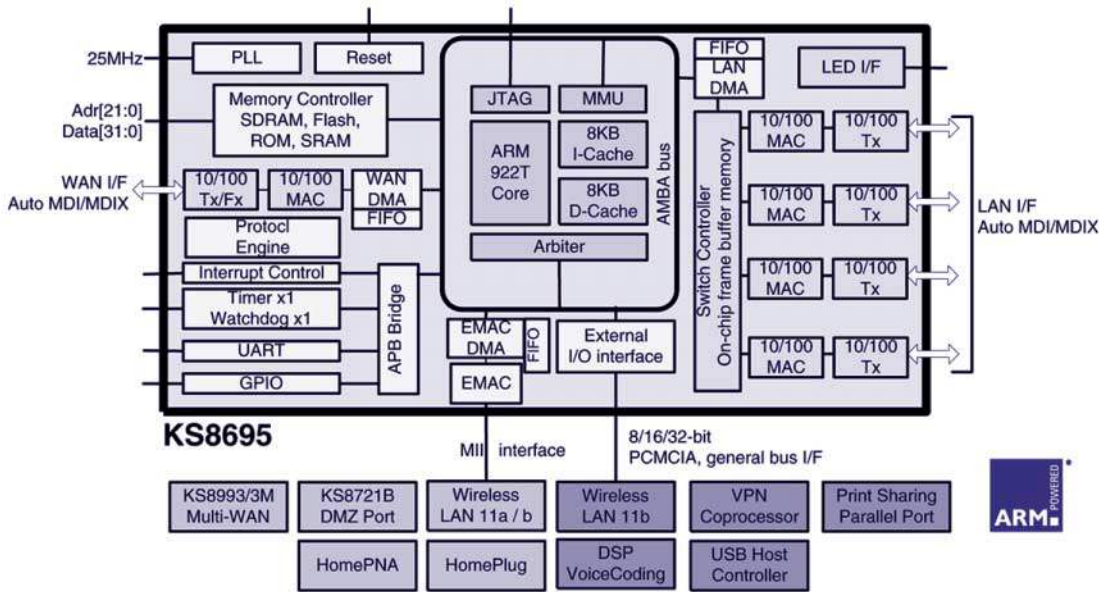ARM is a registered trademark of ARM Limited.

Features

- The CENTAUR KS8695 featuring XceleRouter™ Technology, is a single-chip Multi-Port Gateway-on-a-Chip with all the key components integrated for a high-performance and low-cost broadband gateway
- ARM922T high-performance CPU core
  - 185 MIPS ARM922T core at 166MHz
  - 8kB I-cache and 8kB D-cache
  - Memory Management Unit (MMU) for Linux
  - 32-bit ARM and 16-bit Thumb instruction sets
- XceleRouter™ Technology
  - TCP/UDP/IP packet header checksum generation to offload CPU tasks
  - IPv4 packet filtering on checksum errors
  - Automatic error packet discard
- Integrated switch engine & transceivers:
  - Five 10/100 transceivers and MACs (1P for WAN interface, 4P for LAN switching)
  - 100Base-Tx, 10Base-T and 100Base-Fx modes (Fx in the WAN port).
  - On-chip SRAM as frame buffer memory
  - Wire-speed switching
  - VLAN ID and 802.1p tag/untag options
  - Extensive MIB counter management support
  - IGMP snooping for multicast packet filtering
  - Port-based VLAN
  - QoS/CoS packet prioritization support: per-port, 802.1p and DiffServ based
  - 802.1d spanning tree protocol
  - Dedicated 1K-entry look-up engine
  - Automatic MDI/MDIX crossover on all ports
  - Port mirroring/monitoring/sniffing
  - Broadcast storm protection with % control
  - Full and half-duplex flow control
- Memory and external I/O interfaces
  - 8/16/32-bit wide shared data path for SDRAM, ROM/SRAM/flash & external I/O
  - Total memory space up to 64MB
  - Intel/AMD-type flash support
- WAN/LAN/EMAC DMA Engines & FIFO
  - DMA engine with burst mode support for efficient WAN, LAN and EMAC data transfers
  - FIFOs for back-to-back packet transfers
- Peripheral Support
  - One MII interface (MAC or PHY mode)
  - 8/16/32-bit external I/O interface supporting PCMCIA or generic CPU/DSP host I/F
  - Eight general-purpose input/output (GPIO)
  - Two 32-bit timer counters (one watchdog)
  - Interrupt controller
  - ARM922T JTAG debug interface
- Power management
  - Reduced CPU and system clock speeds
- System design
  - 208-pin PQFP package
  - Up to 166MHz CPU and 125MHz bus speed
- Reference HW/SW evaluation kit
  - Hardware evaluation board (passes class B EMI)
  - Board support package including firmware source codes, Linux kernel, software stacks
  - Documentation for design & programming

Applications

- Multi-port broadband gateway
- Multi-port firewall & VPN appliances
- Combo wireless and wireline gateway
- Multi-port VoIP gateway
- Fiber-to-the-Home managed CPE

KS8695

Peripheral options & examples

Peripheral Options and Examples

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STOCK NO. M1000-090303