

CENTAUR Integrated Multi-Port Gateway Solutions

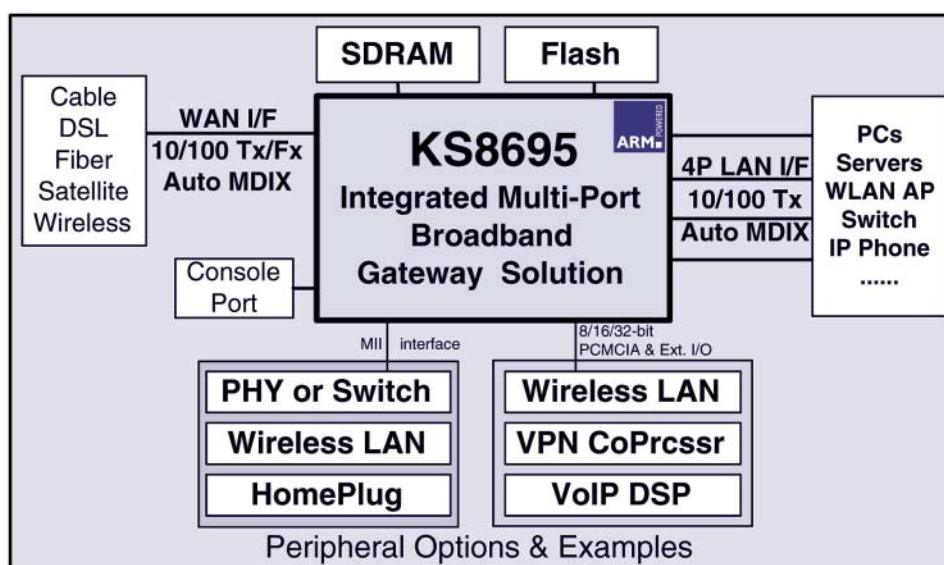
The KS8695 “Multi-Port Gateway-on-a-Chip” delivers a new level of networking integration and performance for speeding broadband gateway development. The key components integrated in the KS8695 include:

- 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



XceleRouter is a trademark of Micrel, Inc.
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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

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