MSP for Multi-Service Platforms and Intelligent IADs

GENERAL

Today's networks must support multi-service applications such as combined packetized voice and data while maintaining service level agreements. The challenge is to design products that meet customer expectations for quality without the need for expensive processors or complicated software. The MSP5000 belongs to a full family of Multi-Service Processors designed to meet the performance, QoS, and security needs of communications equipment used within the customer premise.

The MSP5000 is an ideal solution for IADs, IP PBX's, and Multi-Service Access Devices (MSAD). As shown below, it includes a MIPS CPU, two 10/100 Ethernet MACs, a Security Engine, a Voice Engine, and a Packet Engine.

Because the MSP5000 eliminates the need for a separate processor, DSP, and a security chip, it provides a new level of price/performance for IADs and MSADs.

The MSP5000 has a unique system architecture that provides wire-speed performance. This architecture includes a powerful MIPS CPU, a 3.2 Gbit/s bus, and intelligent context aware DMA engines. Together, this results in an extremely cost effective CPE solution that includes security.

To reduce time-to-market, PMC-Sierra offers comprehensive support for the MSP5000, including evaluation boards, software, application engineering support, training, and documentation that together accelerate the product development process. In addition, the MSP5000 supports Linux, VxWorks, or custom operating systems.

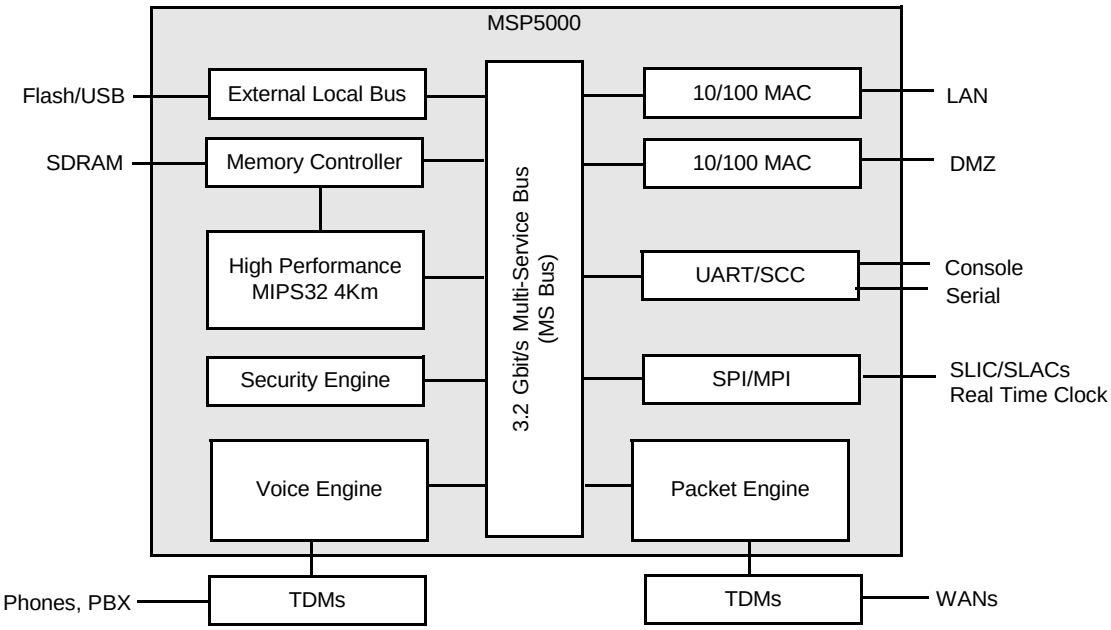
ADVANTAGES

- Built-in quality of service
- Support for up to 20 voice channels on a single chip
- Support for voice over TDM, VoIP, and VoATM
- Support for multiple simultaneous CODECs
- High performance systems architecture with on-chip VPN acceleration
- Flexible WAN interfaces
- Significant cost reduction through integration of multiple processors and discrete parts on a single chip
- Support for VxWorks and Linux

APPLICATIONS

- Multi-service Access Devices
- Integrated Access Devices (IADs)
- IP PBXs

BLOCK DIAGRAM



MSP for Multi-Service Platforms and Intelligent IADs

ELECTRICAL

- 369 pin PBGA
- Vcc 3.3V I/O, 1.8V core
- Power consumption 2W

SYSTEM PROCESSOR

- High performance MIPS32 4Km processor at 150 MHz
- 16 KB instruction cache, 16 KB data cache

ULTRAFAST MULTI-SERVICE BUS (MS BUS)

- Peak bandwidth of 3.2 Gbit/s
- True parallel processing
- Fast path – low latency voice processing
- Prioritized access

VOICE ENGINE

- LSI ZSP processor up to 125 MHz
- 80 KB instruction, 80 KB data on-chip SRAM
- ADPCM hardware accelerator

TELEPHONY INTERFACE

- Dual TDM interfaces each capable of 128 full duplex channels

PACKET ENGINE

- LSI ZSP processor up to 125 MHz
- 80 KB instruction, 80 KB data on-chip SRAM

WAN INTERFACE OPTIONS

- UTOPIA I/II interface
- Two Synchronous serial interfaces
- LAN Interface
- Two Independent 10/100 Ethernet MACs (MII or 7-wire)
- Supports VLAN tagging and DMZ

SECURITY ENGINE

- Hardware accelerator for DES, 3DES, MD5, and SHA-1
- IPSec compliant

SYSTEM CONTROL

- Eight interrupt inputs
- GPIOs
- MIPS timer, two system timers, and watchdog timer
- Block copy engine
- Flexible external local bus interface

MISCELLANEOUS INTERFACES

- UART
- SPI/MPI
- Two-wire serial
- Two Serial communications controllers (asynchronous, synchronous, HDLC)

MEMORY CONTROLLER

- Glueless interface to 128 MB of SDRAM
- Glueless interface to 32 MB of flash

PACKET ENGINE FIRMWARE

- AAL0, AAL1, AAL2, AAL5, ATM SAR, OAM-F5 (loop back)
- RFC1483 - Multiprotocol ncapsulation over AAL5
- QoS
- CES support

VOICE PROCESSING

- Voice CODECs (G.711, G.726, G.729a/b, G.723.1)
- G.168 echo cancellers
- G.711-Fax, fax/modem tone detection
- T.38 Fax relay
- DTMF generation/detection
- Call progress generation
- Caller ID
- Voice activity detection and comfort noise
- Silence suppression
- Channel cross-switch and conferencing
- Gain control
- Jitter buffer
- Adaptive clocking
- Packet playout
- Hardware Fastpath (VoATM)
- BLES VoATM profiles (9,10,11)
- VoIP Inband caller ID/DTMF processing of fax
- CODEC switching and simultaneous multiple CODECs

SOFTWARE

- APIs: Voice and Packet engines, MACs, Security engine, and Block Copy
- Sample code for voice gateway interoperability verification, signaling, and switching
- Sample drivers for selected WAN options (G.SHDSL, SDSL, T1)

CERTIFICATIONS

- NIST certification for security algorithms (FIPS 46-3, 81, and 180-1)

DEVELOPMENT TOOLS

- Support for Linux and VxWorks
- Evaluation boards

THIRD PARTY SUPPORT

- Security Applications
  - Ashley Laurent - Broadway Engine
  - INTOTO - iGateway
  - SofaWare Technologies - Safe@Office
- Voice Processing
  - GIPS - Global IP Sound - NetEq
  - RADVISION - H.323, SIP, MGCP
- EJTAG Debuggers
  - EPI - MAJIC probe
  - WindRiver - visionICE II

Head Office:
PMC-Sierra, Inc.
8555 Baxter Place
Burnaby, B.C. V5A 4V7
Canada
Tel: 1.604.415.6000
Fax: 1.604.415.6200

To order documentation, send email to:
document@pmc-sierra.com
or contact the head office,
Attn: Document Coordinator

All product documentation is available on our web site at:
http://www.pmc-sierra.com
For corporate information, send email to:
info@pmc-sierra.com

PMC-2041691 (R2)