MSP7140

VDSL2 Multi-service Processor

Preliminary Product Brief

PRODUCT OVERVIEW

The MSP7140 multi-service processor is a cost-optimized VDSL2/ADSL2+ SoC and line interface solution for multi-service residential gateways (RGs). The chipset addresses carrier multi-service requirements with superior performance, advanced QoS capabilities, and robust voice processing achieved with a standard, open programming model.

The MSP7140 chipset is part of PMC-Sierra's 7100 Series of multi-service processors, which now also includes the MSP7150. Both the MSP7140 and MSP7150 extend the range of the 7100 Series by including higher performance and enhanced interfaces.

The 7100 Series enables Telco and ISP visions for the digital home to be turned into reality. This newest breed of RG processor ensures concurrent single-core functionality for voice, video, and data services resulting in service performance guarantees. The MSP7140's superior packet processing and QoS performance address planned and evolving use cases. As well, the MSP7140 has the processing power to support all VDSL2 carrier service models including LAN traffic and headroom to support application processing.

The MSP7140's high performance multi-threaded (MT) 7100 Series core delivers dynamic multifunction guarantees for the flexible allocation of resources. Combined with dual 10/100/1000 GE MACs, a DDR1/2 memory interface, and dual USB 2.0 interfaces, this powerful RG engine plays a central role for the delivery of IP services.

The MSP7140 chipset supports several DSL configurations including a third-party interoperable single-design ADSL2+/VDSL2 for single box deployments.

The MSP7140 includes a Linux software development kit.

PRODUCT HIGHLIGHTS

SYSTEM PROCESSOR

- 7100 Series MT MIPS32 core
- 32 KB zero wait state scratchpad
- DSP extensions for efficient voice processing
- 32-bit, 200-MHz multi-service bus with multi-master access
- Flexible, programmable, hardware-based QoS multi-service bus arbitration allows provisioning of system bandwidth for high-throughput peripherals
- Support for multiple transaction priority levels
- DDR1/2 SDRAM

VDSL2 INTERFACE

- Integrated VDSL2/ADSL2+
- Compliance-proven ADSL/ADSL2/ADSL2+/VDSL2 interoperability
- Profiles 8a, 8b, 8c, 8d, 12a, 12b, 17a, PHY support for 30a
- ADSL2+ Annexes A, B, L, M
- VDSL2 Annexes A, B, C and 997, 998 and arbitrary band plans
- Simultaneous support for dual VDSL2 bearer channels plus hardware pre-emption

INTERFACES

- Glue-less interface to SLIC/SLACs and DAAs
- Support for up to 32-channel cross-connects with TDM to TDM and TDM to VoIP channel switching
- Dual 10/100/1000 MACs with MII/RMII/GMII interfaces
- 33/50 MHz PCI 2.3 host, initiator/target interface
- Dual Hi-speed USB 2.0 with integrated PHYs (support for host and device modes)
- Local bus interface (for flash connections, etc.)
- Hardware block for IPSec (DES, 3DES, AES, MD5, SH-1)
- Two external timer outputs
- Serial peripheral interface (SPI), Two-wire interface (TWI), Dual UART

VOICE PROCESSING

- Voice Coding G.711, G.729a, G.729ab, G.723.1

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BENEFITS

Exceptional simultaneous processing behaviors are essential for triple play and the evolution to true multi-service deployments. PMC-Sierra's RG solution enables complex traffic management, routing, bridging, and firewall tasks concurrently with the ability to support processing guarantees for voice, video, and data services. These simultaneous processing capabilities ensure critical quality of experience (QoE) for all broadband service deployments.

Multi-function core	• Dynamic reassignment of processing cycles between diverse functions of the multi-service digital home with cycle guarantees for robust QoE
Processing power	• The MT 7100 Core achieves industry-leading processing power • Provides essential headroom to address requirements for evolving services, service bandwidth, and digital home infrastructure: stronger management/control, interworking of HAN technologies for end-to-end QoS, and gateway application processing
Multi-service networking	• Greater packet processing permits advanced QoS features for robust service delivery, for high service bandwidth and guarantees for service growth
Robust voice processing	• VoIP Terminal Adapter functionality is guaranteed, independent of all other processing and traffic conditions • Centralized processing of voice enables resources (when not required for voice functions) to be dynamically allocated to other functions without influence from software
'Programmer-friendly' programming model	• Leverages standard tools and a large software ecosystem with best of breed components support • Linux-based software stack • Open 7100 Series programming model
Gigabit throughput	• The MSP7100 Core provides exceptionally fast networking performance to leverage the full potential of next generation access networks and ultra-high-speed home networking technologies

SOFTWARE

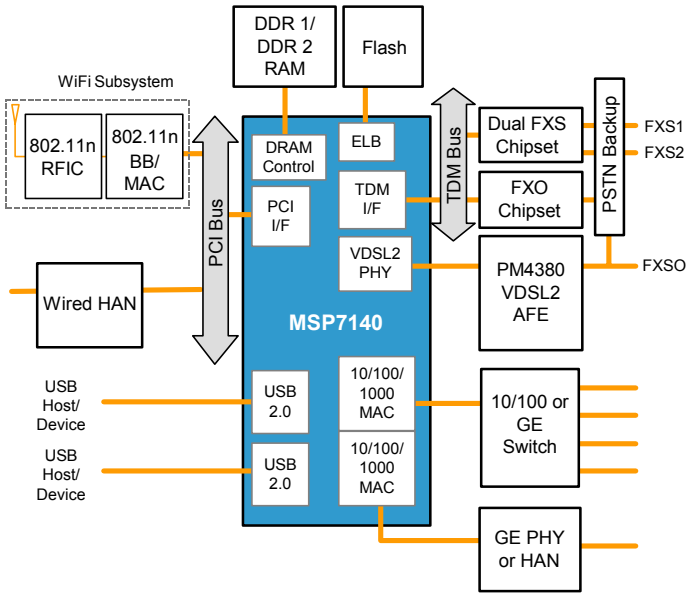
The MSP7140 is supported by a Linux software development kit (7100 Series RG SDK). The SDK enables designers to quickly and easily build high-performance, feature-rich gateways.

The SDK includes a voice processing module (VPM) VoIP firmware suite.

The MSP7140 and SDK are supported by standard tools from industry leading vendors as well as by GNU development tools (compiler, debugger, EJTAG support, etc.).

For more details about the software development environment, refer to the MSP7100 Series SDK Product Brief.

RESIDENTIAL MULTI-SERVICE VDSL2 GATEWAY



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