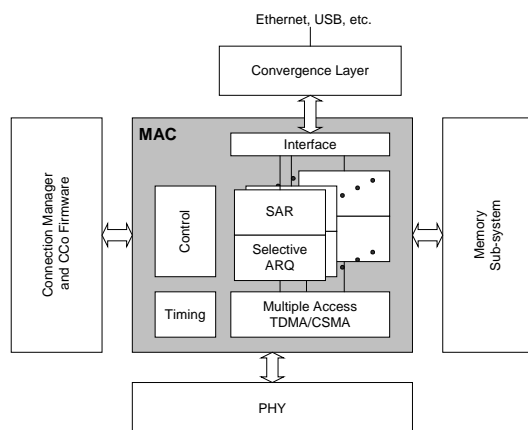


Overview

HomePlugAV is a new standard designed to provide the high data rates and guaranteed Quality of Service (QoS) required by today's audio-visual applications. It is capable of supporting multiple high-rate HDTV data streams over existing in-home powerline wiring. The HomePlugAV MAC layer combines both TDMA and CSMA access techniques with advanced selective ARQ and line-cycle adaptive modulation to provide excellent performance and coverage over the powerline.



Serrano Systems, Inc. is pleased to introduce its complete HomePlugAV compatible MAC implementation. Suitable for ASIC and FPGA implementations, our MAC offers high throughput, support for multiple AV data streams, and full QoS support.

Serrano's MAC is a complete implementation of the HomePlugAV MAC layer. It provides throughputs in excess of 130 Mbps using an optimized combination of fully synthesizable RTL hardware and C-language firmware.

Key Features and Benefits

- Complete, synthesizable RTL
- Complete Firmware optimized for ARM9-class CPU.
- 64 Transmit and 64 Receive MAC Frame Streams
- CCo Capable
- Flexible firmware architecture.
- PHY Layer management functions
- PHY Model for end-to-end digital testing (optional).
- Fully implemented and tested in all ASIC and FPGA.
- Full Source Code available

Functions

- Framing, Segmentation & Reassembly
- Selective ARQ
- MSDU ICV, FCCS and PBCS calculation and checking.
- 128-bit AES Encryption
- Timing and Synchronization Functions
- Tone Map Management, Sounding and Channel Estimation functions
- Carrier Frequency Estimation from Beacon Transmissions.
- CCo Functions
- HomePlug 1.0 Coexistence
- AC Line Cycle Synchronization
- Neighbor Network Functions
- Built-In Test Functions:
 - Transmit Test
 - Receive Test
 - Segment Loopback

The HomePlugAV MAC

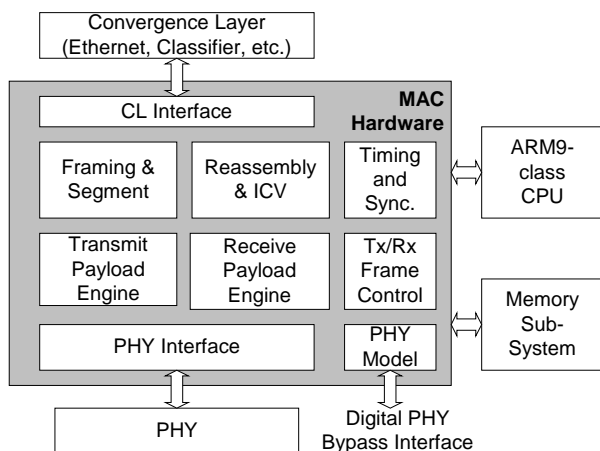
The MAC layer of the new HomePlugAV standard provides efficient and reliable transport of data over the powerline, as well as guaranteed QoS. It combines both TDMA and CSMA access techniques with advanced selective ARQ and line-cycle adaptive modulation to provide excellent performance and coverage.

Guaranteed QoS is supported using TDMA protocols supporting parameterized QoS and Connection Specifications (CSPEC). Traditional best-effort networking is supported through CSMA protocols and prioritized QoS/VLAN tags.

Innovative networking functions of the MAC layer include neighbor network functions that efficiently share bandwidth and HomePlug 1.0 coexistence functions that provide fair access to previous generation devices.

Hardware Implementation

Serrano's HomePlugAV MAC hardware is fully synthesizable and is proven in both ASIC and FPGA implementations.



The MAC hardware implements computationally intensive encryption and CRC functions as well as data movement and buffering functions, offloading the system CPU. Up to 64 simultaneous transmit and receive MAC frame streams are supported. Hardware timing and synchronization functions support operation as a Central Coordinator (CCo) and as a Station (STA).

Firmware Implementation

Serrano's HomePlugAV MAC firmware provides a complete MAC layer implementation with excellent flexibility and performance. Sophisticated selective ARQ algorithms provide excellent throughput while integrated PHY management and test functions ease the task of building a complete HomePlugAV solution. Central Coordinator (CCo), Neighbor Network and HomePlug 1.0 Coexistence functions are also supported.

Availability

The HomePlugAV MAC is available now. For more information, contact sales@serranosystems.com. Or visit our website at www.serranosystems.com.

About Serrano Systems, Inc.

Serrano Systems Inc. is a small, highly focused provider of technology for communications systems and products. It delivers high-value solutions incorporating hardware and software through a combination of licensable intellectual property (IP) and design services.