
MaGIC experience

IEEE802.3 SG

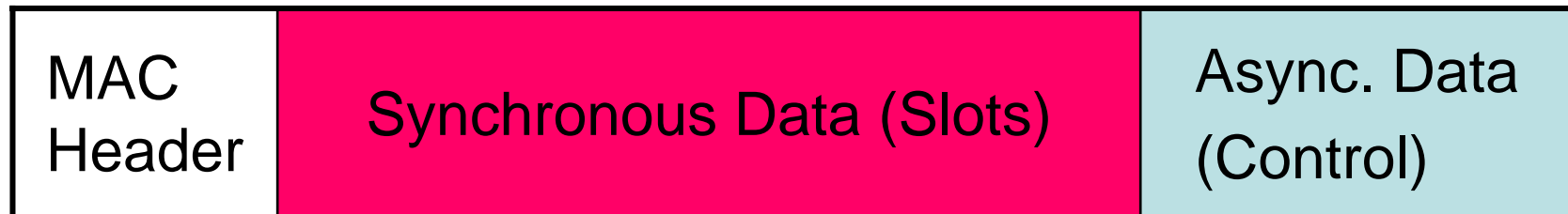
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What is MaGIC?

- “Media – accelerated Global Information Carrier”
 - Low-latency transport for multiple audio channels with advanced fidelity (bidirectional, 32 channels per direction, 32 bits per audio sample)
 - Satisfies all requirements of live performances (clocking, distance synchronization, jitter/latency management)
 - Fully digital (starting from guitar pick-up), easy to use
 - Able to provide power (removes need for batteries)
 - Supportive of intuitive control interfaces
 - Uses generic CAT-5 wire and 100 MBit PHYs

How MaGIC works?

- Uses a fixed-size fixed-format Ethernet frame as a container for synchronous and asynchronous data
- At each network clock (48 kHz typically), every MaGIC device synchronously sends and receives one MaGIC frame through every MaGIC port



Synchronous Data Format

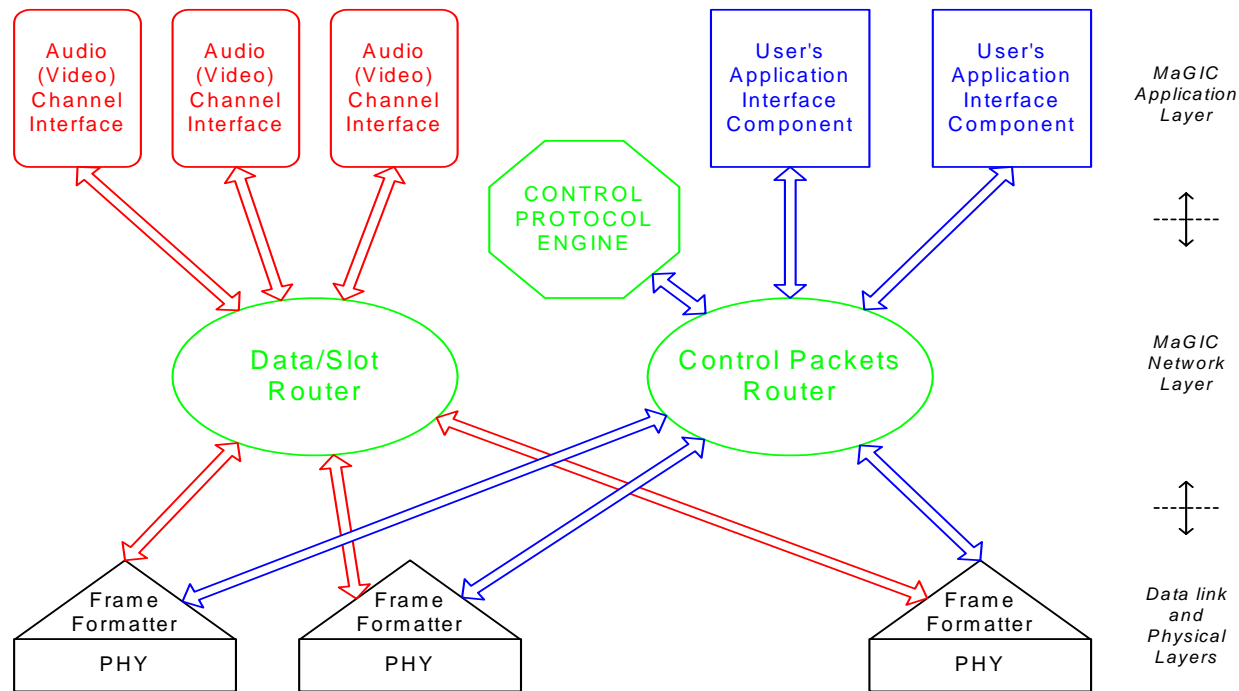
- Size = 132 octets
 - One 32-bit “Valid” word
 - 32 32-bit slots
- Channel is created by allocating one or more slots
 - Possible number of channels from 0 to 32
 - 1 slot/channel ~1.5 Mbit/sec
 - Maximum channel throughput ~50 Mbit/sec

Asynchronous Data

- Carries up to 32 octets of control data per frame for simple control messages (MaGIC network control, Volume/Tone/Etc. control)
- Built-in segmentation/reassembly mechanism for up to 4K long messages (IP support)
- Control data bandwidth ~10 Mbit/sec

MaGIC device structure

- MaGIC device is a combination of two switches - for synchronous and asynchronous data



MaGIC Device Structure

MaGIC network topology and characteristics

- Tree-like or daisy-chained connection of MaGIC devices
- Maximum 250 usec of added synchronous data latency per device
- The source of synchronization is the “root” device
- The overall network bandwidth grows with the number of connected devices
- In most cases, no interruptions due to connection of a new device
- Power-over-Ethernet is used instead of batteries

What we expect from Residential Ethernet

- Low latency and jitter network (<500 usec per device) with guaranteed bandwidth
- Low cost, reliable and simple in use
- Operate on generic wire home Ethernet network
- Support for multiple channels of advanced fidelity audio and high-quality video
- Meet the requirements of permanent installations such as live venues and recording studios

THANK YOU!