Recommended Practice: Residential Ethernet

Draft PAR

November, 2005

Title (4)

Draft: Local and Metropolitan Area Networks: Recommended Practice for Residential Ethernet - Guaranteed Quality of Service for Low Latency and Time Sensitive Applications in 802.1/802.3 Local Area Networks

… or …

Draft: Local and Metropolitan Area Networks: Recommended Practice for Residential Ethernet - Guaranteed Quality of Service for Interactive Audio/Video Streams in 802.1/802.3 Local Area Networks

PAR Scope (13)

- This project will describe how guaranteed low latency and time-sensitive delivery of data between synchronized end points can be done using 802.1/802.3 Local Area Networks on a plug-and-play basis.
- The recommended practice will reference specific parts of existing 802 (and possibly 1588) documents. Indeed, it is intended to provide a guideline for the development of amendments to existing 802/1588 specifications, and (perhaps) to new 802/1588 specifications. The final recommended practice document will not be completed until the relevant new or amended specifications are complete.
- It may describe minor changes to the IEEE 802.3 specification to support plug-and-play operation and/or time-sensitive measurements.
- It will include performance requirements on IEEE 802.1 bridges and DTE, including packet forwarding and admission control.
- It will include performance requirements for a synchronization service, preferably for a layer 2 version of IEEE 1588.
- (need to add reference model description and annexes with example attachments to higher layers: e.g., UPnP and RTP)

PAR Scope (13)

Is the completion of this document contingent upon the completion of another document? Yes

This PAR includes work on independent capabilities, and much of the work is contingent on other projects. These other projects will need an overall description so that they will result in a coherent architecture. These projects include:

- Layer 2 timing synchronization (IEEE 802.1 and IEEE 1588)
- Specific rules for transmitting and forwarding of particular traffic classes in 802.1 endpoints and bridges (IEEE 802.1Q)
- Admission control system to provide reservations for time sensitive data streams (IEEE 802.1)
- Method for defining a “defended network” that ensures that the stream QoS

PAR Purpose (14)

- This project will allow 802.1/802.3 Local Area Networks to support the requirements of consumer electronics and professional media content creation devices in the transport of digital media.
- 802.1, 802.3 and 1588 standards have numerous configuration controls. This recommended practice will define particular settings for those configuration items that enables the AV environment.

PAR Reason (15)

"Residential" networks represent a new and very broad application space for 802.1/802.3 LANs. The digital networking port* on consumer electronics (96 billion USD in 2003) equipment has not yet been decided, and 802.1/802.3 has a strong possibility of being the dominant, long-term solution of choice if it also provides low latency guaranteed bandwidth services.

***The overall market for home networking semiconductors will grow 12% per year from 2004 to 2008, moving from $1.34 billion in the beginning of the forecast to $2.32 billion at the end of the forecast. This growth will come despite decreasing prices on a per unit basis, as the average price for a home networking IC will decline from $8 in 2004 to $5 in 2008. This increase in revenues despite downward pressure on pricing shows how the overall unit momentum throughout the forecast period will create a "rising tide" for the connected home silicon market (the market will go from 174 million ICs shipped in 2004 to 458 million in 2008). - Instat**