Residential Ethernet Study Group
Submitted by Duane Paulson, Gibson Guitar Corp.

9.30.2004

Meeting was called to order by Steve Carlson, study group chair. Introductory comments were made by Steve and Bob Grow, the 802.3 chair. Meeting ground rules were discussed and the study group reflector was announced: http://www.ieee802.org/3/re_study. Richard reviewed the IEEE standards structure, bylaws and rules, and the role of the study group. He placed special emphasis on the IEEE rules on patents.

Steve reviewed, and there was participant comment on, the 5 criteria
- Broad set of applications
- Compatibility with IEEE std 802.3
- Distinct Identity
- Technical feasibility
- Economic feasibility

Presentations were given by Dennis Lou, Pioneer; Alexei Beliaev, Gibson Labs; Michael Teener, Plumblinks.

Dennis listed key applications as networked audio (both compressed and uncompressed) and video (streaming and HDTV, HDTV trick play). Requirements are bounded jitter and latency, bandwidth allocation and end-point synchronization. Dennis laid out, and there were group comments on, the following per channel bandwidth requirements

HDTV	20-40 Mbps
HDTV trickplay	Up to 300X HDTV
Uncompressed audio	1.5 Mbps/channel
Video transfer	Unbounded

Alexei described the MaGIC protocol and Res-E wishes for MaGIC. The requirements he laid out were virtually identical to those from Dennis. Several questions and complements about the protocol.

Michael discussed 1394 and the desire for Res-E as a backbone for Firewire. Current solutions such as 1394b/c long distance and 802.11e are not acceptable. The 1394 requirements outlined dovetailed with those outlined by Pioneer and Gibson with the addition of bridging 1394 buses. Group discussion about market size and 1394 vs. Ethernet for low-latency synchronous applications followed. General consensus seemed to be that Ethernet is the bigger bandwagon and the battle to try to make 1394 the standard network has been fought and lost.

Michael made a second presentation on his concepts of the technical and economic feasibility of Res-E and incorporating Firewire functionality onto the Ethernet backbone. His conclusion is that a lot of what is needed is already incorporated into 802.1

Lunch break

Presentation from Mike McCormack, 3Com, stating that we need to make sure we don't burden lower bandwidth applications with undue costs associated with high-bandwidth applications. He pointed out that audio is a significant application that must be supported.

The group began discussion of the <u>draft</u> objectives. Objectives discussed included:
- Plug and Play – no user set-up, auto MDI-X, auto config.
- Large aggregate bandwidth (>=1G).
- Isochronous traffic supported only over 100Mb or greater full-duplex.
- At least 75% of aggregate bandwidth available for isochronous traffic
- At least 10% of aggregate bandwidth available for asynchronous traffic
- Low jitter and 0 wander
- Low delay (500uS maximum across a single hop)
- Isochronous bridging to 802.11
- Isochronous bridging to IEEE 1394
- Network provides "house" clock
- No packet loss in isochronous mode
- Low cost
- No new PHY(s)
- Network automatically reclaims allocated but unused resources
- Compatible with IEEE 802.3AF Clause 33 (power over Ethernet)
- Isochronous traffic is not disrupted when a station or session is added to the network
- A mechanism to request/grant/assign resources and the default rule(s) for managing the resources
- The default policy is first-come, first-served

Samsung Electronics made a presentation on the need for timing master requirements.

Steve has posted the draft objectives to the reflector and asked the group to look at them in the evening and "reflect" for discussion in morning.

10/1/2004

Steve Carlson called the meeting to order at 8:45.

The group discussed the draft objectives. The following objectives were added:
- Supports 802.1q traffic (isochronous)
- Support arbitrary topologies within reasonable limits (to be further defined)
- Add "bandwidth is reserved" to the objective "No packet loss in isochronous mode" so it reads ""No packet loss in isochronous mode, bandwidth is reserved"
- Modify the objective "The default policy is first-come, first-served" to "The default policy is first-come, first-served by request"

Study Group Motion

A motion was made (M. Johas Teener) and seconded (D. Paulson) to have the SG chair sort the objectives into a more logical order and to adopt the objectives in the document (resg_objectives_0904_1.pdf). Vote, Yes: 21   No: 0   A: 0

Steve reviewed the next steps and future meetings. The next meeting is the IEEE Plenary Meeting, November 14-18, San Antonio, TX. The next interim meeting is tentatively slated for Jan. 24-28, 2005 in Vancouver, CA

Steve reviewed the task list for the November meeting
- Presentations addressing the objectives and the 5 criteria
    - Requirement for isochronous transmission
    - Need for <500uS latency
    - CE requirement for power over Ethernet
    - Plug and play
- Prepare PAR and 5 Criteria
- Determine 802.3/802.1 content

Steve adjourned the meeting at 10:00 in order for ad hoc groups to discuss their topic areas.