Recommended Practice: Residential Ethernet

Broad Market Potential

Broad set(s) of applications
Multiple vendors, multiple users
Balanced cost (LAN vs. attached stations)

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

- At the RE Study Group meetings, individuals from companies representing component suppliers, equipment vendors and users expressed their support for the project. Ethernet equipment vendors and customers are able to achieve an optimal cost balance between the network infrastructure components and the attached stations.

*NOTE: 174 million ports in 2004; 2008 - 458 million; growth rate 21%, 50/50 wireless/wireline (3rd. Party Research)

Compatibility with IEEE 802

Conformance with CSMA/CD MAC, PLS
Conformance with 802.2
Conformance with 802.1D, 802.1Q, and 802.1F* (Not in Rules v 5.5)
Conformance with 802 Functional Requirements

- The recommended practice will reference specific parts of existing 802 documents. Indeed, it is intended to provide a guideline for the development of amendments to existing 802 specifications, and (perhaps) to new 802 specifications.
- 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 new IEEE 802.1 synchronization service.

Distinct Identity

Substantially different from other 802 specifications / solutions
Unique solution for problem (not two alternatives / problem)
Easy for document reader to select relevant spec.

- There is no existing 802 standard or approved project that provides quality of service for low-latency, low-jitter and guaranteed bandwidth.

- The proposed project will be formatted as a recommended practice for IEEE 802.1/802.3 networks, with references to specific sections of IEEE 802.1 and (possibly) 802.3 documents.

Technical Feasibility

Demonstrated feasibility; reports – working models
Proven technology, reasonable testing
Confidence in reliability

- Ethernet systems (comprising interface controllers, bridges, routers, management systems, and other devices) represent the most widely deployed networking technology in history. The proposed project will build on the vast array of Ethernet component and system design experience, and the broad knowledge base of Ethernet network operation.
- The proposed project will, to the extent possible, re-use specifications developed by 802.1 and 802.3 and develop any new access control augmentations in accordance with the rigorous standards of proof applied to 802 projects. These augmentations will not involve significant added complexity. Time-sensitive services are already present in other common technologies, e.g. IEEE 1394.
- The reliability of Ethernet components and systems can be extrapolated in the target environments with a high degree of confidence.

Economic Feasibility

Cost factors known, reliable data
Reasonable cost for performance expected
Total installation costs considered

- The cost factors for Ethernet components and systems are well known. Ethernet consistently demonstrates the most attractive cost/performance ratio of any networking technology, at any operating speed. This fact is well established in the current networking application space.
- Adding Residential Ethernet services will have a negligible impact on the current cost of an Ethernet port.
- This project may improve on general cost/performance, due to the significantly higher volumes in the consumer electronics/residential application space.
- Installation costs, as well as maintenance and operations costs, should be reduced when compared to competing technologies through a combination of simpler, more reliable configurations and a more optimal system architecture.

Straw Poll

The RESG accepts the draft 5 Criteria (re_critters_012505.pdf).

Y: N: A: