5 Criteria and PAR Discussion

Ottawa, ON
April, 2007
Edited May 15, 2007

Mike Bennett
mjbennett@ieee.org

Broad Market Potential Motion

Market pressure and legislative action worldwide is demanding improvements in energy efficiency of networked systems. Energy costs are a major component of operating cost. EEE features will be explicitly or implicitly required by a significant fraction of Ethernet edge connections in the future.

Energy consumption and efficiency will become a major factor in the choice of network solutions, especially in data centers. EEE capabilities will be important as Ethernet becomes an enabler for low duty cycle, consumer class applications.

EEE capabilities will enable new system level energy management techniques that will save energy beyond the network interface. EEE will address interface changes required to improve energy efficiency.

Ethernet equipment vendors and customers are able to achieve an optimal cost balance between the network infrastructure components and the attached stations.

Motion

Adopt broad market potential criterion response

M: H. Frazier
S: B. Woodruff

Y: 11 N: 0 A:0

Compatibility straw poll 1

1. Compatibility with legacy PHYs will be addressed, any incompatibilities including operational conditions will be evaluated in terms of market relevance

OR

2. Compatibility with legacy PHYs will be addressed, incompatibilities will be evaluated in terms of market relevance

1. 2
2. 3
Don't care: 3

Compatibility

- IEEE 802 defines a family of standards. All standards shall be in conformance with the IEEE 802.1 Architecture, Management, and Inter-working documents as follows: 802. Overview and Architecture, 802.1D, 802.1Q, and parts of 802.1f. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with 802.

  - Each standard in the IEEE 802 family of standards shall include a definition of managed objects that are compatible with systems management standards.

As an amendment to IEEE Std 802.3, the proposed project will remain in conformance with the 802 Overview and Architecture.

The proposed project will remain compatible with 802.1D, 802.1Q and 802.1f. The project will work with 802.1 to address any extensions to these standards as may be required.

As an amendment to IEEE Std 802.3, the proposed project will follow the existing format and structure of 802.3 MIB definitions.

Compatibility with legacy PHYs will be addressed, incompatibilities will be evaluated in terms of market relevance, e.g. operational conditions and media types, e.g. the proposed standard may include a 10 Mb/s PHY that can not support 100m of category 3 cable.

Motion

Adopt compatibility criterion response

M:
S:
Y: N: A:

Distinct Identity

Fixed part (the questions we must answer)
- a) Substantially different from other IEEE 802 standards
- b) One unique solution per problem (not two solutions to a problem)
- c) Easy for the document reader to select the relevant specification

IEEE Std 802.3 has not addressed energy efficiency.

For example, there is no mechanism to allow a change of PHY speed without dropping link and renegotiation. We may introduce specifications to optimize existing PHYs, however, such features will only be accessible through EEE

The proposed project will be formatted as a amendment to IEEE Std 802.3, making it easy for the document reader to select the EEE specification.

Technical Feasibility

- a) Demonstrated system feasibility
- b) Proven technology, reasonable testing
- c) Confidence in reliability

Energy efficiency techniques that reduce capability to reduce power consumption have been broadly deployed and used.

The study group expects the proposed standard to use existing functions or minor modifications to existing PHYs so the technology is well understood.

The control mechanism will build upon well known simple protocols.

The latency variation introduced by EEE is expected to be transparent to most upper layer protocols. EEE will define control, status, and management so that other protocols can be informed of the state of EEE.

Energy saving effectiveness and system feasibility will be demonstrated through simulation of typical applications and usage; in conjunction with input from higher layer networking experts.

Technical Feasibility - brainstorm

We do not intend to stretch established technical feasibility.

EEE mechanisms use existing functions or minor modifications to existing PHYs

Energy considerations of the Ethernet portions of systems have not been considered

Join the club

RPS is proven in proprietary mobile systems

Many protocols are already tolerant of latency variation to support shared media

Providing the hooks and status, MIB objects, necessary to inform other protocols of the state of EEE.

Economic Feasibility

- a) Known cost factors, reliable data
- b) Reasonable cost for performance
- c) Consideration of installation costs

EEE will not materially impact component or installation costs, and may provide cost savings opportunities.

The control mechanism will use similar functions to those already included in most Ethernet equipment and therefore will not add any significant cost.

EEE may not support all port types or media options as specified in 802.3

The energy savings achieved will result in lower operating costs.