Drafting the 5 Criteria

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Overview

- Responses to the 5 Criteria (5C) must be completed by this Study Group before it can progress to a Task Force.
- The intent of this presentation is to get the discussion going with a goal of getting some of the 5 Criteria responses approved by the Study Group at this or the next meeting.
  - Wording in the responses is a first pass
- Some of the responses cannot be finalized until we adopt objectives.
  - *Italics* used to highlight known instances of text that may need updating as objectives are adopted.

- Supporters / contributors / feedback welcome

IEEE 802.3 Five Criteria

The IEEE 802 Criteria for Standards Development (Five Criteria) are defined in subclause 12.5 of the 'IEEE project 802 LAN/MAN Standards Committee (LMSC) operations manual'. These are supplemented by subclause 7.2 'Five Criteria' of the 'Operating Rules of IEEE Project 802 Working Group 802.3, CSMA/CD LANs'.

Items required by the IEEE 802 five criteria are shown in Black text, supplementary items required by IEEE 802.3 are shown in Blue text.

Broad Market Potential

A standards project authorized by IEEE 802 LMSC shall have a broad market potential. Specifically, it shall have the potential for:

a) **Broad sets of applicability.**
b) **Multiple vendors and numerous users.**
c) **Balanced costs (LAN versus attached stations).**

- Ethernet has become widely deployed as a preferred networking solution for Internet, cloud, computing and storage applications ranging from small business to large enterprise. Increased network traffic in these applications, along with advances in processors, server virtualization and converged networking, are driving the need for higher bandwidth server connections. Increasing the data rate for the BASE-T family of PHYs will help meet this demand.

- Ethernet BASE-T interfaces operating over twisted pair cabling have been particularly suited for heterogeneous environments with a mixed set of applications, equipment and networking port speeds. The ability to migrate to higher speeds of operation on an as-needed basis, while maintaining compatibility with existing equipment, is appealing to a wide field of users.

- 112 individuals attended the "Next Generation BASE-T" Call For Interest, indicating a wide interest in the topic. 51 people representing 29 companies indicated they would contribute to the project.

- A higher speed BASE-T interface will take advantage of cost effective twisted pair cabling and the scale of silicon component manufacturing to provide a balanced cost between LAN infrastructure and the attached stations. *<pending reach objective adoption>*

Compatibility

- **IEEE 802 LMSC defines a family of standards. All standards should be in conformance : IEEE Std 802, IEEE 802.1D, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 Working Group. In order to demonstrate compatibility with this criterion, the Five Criteria statement must answer the following questions. Each standard in the IEEE 802 family of standards shall include a definition of managed objects that are compatible with systems management standards.**
    - a) **Does the PAR mandate that the standard shall comply with IEEE Std 802, IEEE Std 802.1D and IEEE Std 802.1Q?**
    - b) **If not, how will the Working Group ensure that the resulting draft standard is compliant, or if not, receives appropriate review from the IEEE 802.1 Working Group**
- **Compatibility with IEEE Std 802.3**
- **Conformance with the IEEE Std 802.3 MAC**
- **Managed object definitions compatible with SNMP**

- *The <projectname> PAR mandates that the amendment shall comply with IEEE Std 802, IEEE Std 802.1D and IEEE Std 802.1Q.*
- As an amendment to IEEE Std 802.3-2012 the proposed project will remain in conformance with *clause 80*.
- The proposed amendment will conform to the full-duplex operating mode of the IEEE 802.3 MAC.
- The proposed amendment will conform to the *40 Gb/s and 100 Gb/s Media Independent Interfaces (XLGMII,*
- *CGMII)* specified by IEEE Std 802.3-2012 *with optional additions for Energy Efficient Ethernet*.
- The project will include a protocol independent specification of managed objects with SNMP management capability to be provided in the future by an amendment to or revision of IEEE P802.3.1.

- *<note: will require updating dependent upon speed objectives>*

Distinct Identity

Each IEEE 802 LMSC standard shall have a distinct identity. To achieve this, each authorized project shall be:
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.**
d) **Substantially different from other IEEE 802.3 specifications/solutions.**

- There is no standard that supports Ethernet over structured twisted pair cabling at data rates above 10Gb/s.

- The proposed amendment to the existing IEEE 802.3 standard will be formatted as a new clause, making it easy for the reader to select the relevant specification.

- *<note: will require updating if multiple speeds are addressed by the objectives.>*

Technical Feasibility

For a project to be authorized, it shall be able to show its technical feasibility. At a minimum, the proposed project shall show:

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

- *Systems and infrastructure supporting Ethernet operation over twisted pair cabling have been deployed by the hundreds of millions at speeds ranging from 10Mb/s to 10Gb/s.*

- *Component vendors have presented data on the feasibility of the necessary components for this project. Proposals, which either leverage existing technologies or employ new technologies, have been provided. Data provides indicates that higher speed operation falls within the technology envelope of existing BASE-T standards.*

- The proposed project will build on the array of Ethernet component and system design experience, and the broad knowledge base of Ethernet network operation.

- The reliability of Ethernet components and systems can be projected in the target environments with a high degree of confidence.

Economic Feasibility

For a project to be authorized, it shall be able to show economic feasibility (so far as can reasonably be estimated) for its intended applications. At a minimum, the proposed project shall show:
a) **Known cost factors, reliable data.**
b) **Reasonable cost for performance.**
c) **Consideration of installation costs.**

- The cost factors for Ethernet components and systems are well known. The proposed project may introduce new cost factors which can be quantified.

- Prior experience in the development of twisted pair physical layer specifications for Ethernet indicates that the specifications developed by this project will entail a reasonable cost for the resulting performance.

- The widespread use, and low cost of installation, of structured twisted pair cabling systems supports economic feasibility with regards to total cost of installation.

- Network design, installation and maintenance costs are minimized by preserving network architecture, management, and software.

Additional page