IEEE 802.3 Criteria for Standards Development (CSD)

The IEEE 802 Criteria for Standards Development (CSD) are defined in Clause 14 of the IEEE 802 LAN/MAN Standards Committee (LMSC) Operations Manual. The criteria include project process requirements ("Managed Objects") and 5 Criteria (5C) requirements. The 5C are supplemented by subclause 7.2 'Five Criteria' of the 'Operating Rules of IEEE Project 802 Working Group 802.3, CSMA/CD LANs'.

The following are the CSD Responses in relation to the IEEE P802.3bq PAR

Items required by the IEEE 802 CSD are shown in Black text and supplementary items required by IEEE 802.3 are shown in **blue** text.

Managed Objects

Describe the plan for developing a definition of managed objects. The plan shall specify one of the following:

a) The definitions will be part of this project.

b) The definitions will be part of a different project and provide the plan for that project or anticipated future project.

c) The definitions will not be developed and explain why such definitions are not needed.

- The definition of protocol independent managed objects, to be included in Clause 30 of IEEE Std 802.3, will be part of this project.
- In addition it is expected that the definition of Simple Network Management Protocol (SNMP) managed objects, written using the Structure of Management Information version 2 (SMIv2), and making reference to the protocol independent managed objects provided by this project, will be added in a future amendment to, or revision of, IEEE Std 802.3.1 IEEE Standard for Management Information Base (MIB) Definitions for Ethernet.

Coexistence

A WG proposing a wireless project shall demonstrate coexistence through the preparation of a Coexistence Assurance (CA) document unless it is not applicable.

a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13?

b) If not, explain why the CA document is not applicable

- A CA document is not applicable because the proposed project is not a wireless project.

Broad Market Potential

Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:

a) Broad sets of applicability.

b) Multiple vendors and numerous users.

- Ethernet has become widely deployed as a preferred networking solution for Internet service provider, cloud, computing and storage applications ranging from small business to large enterprise. Increased network traffic in these applications driven by server virtualization and converged networking is 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 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 (2012), indicating a wide interest in the topic. 51 people representing 29 companies indicated they would contribute to the project. 82 people attended the 25GBASE-T Call For Interest. 37 people from 25 companies indicated they would contribute to the project. A straw poll in the P802.3bq task force (Sept’14) indicated unanimous support for adding 25GBASE-T into that project.
- ~~A~~ Higher speed BASE-T will take advantage of cost effective twisted pair cabling and the advances in silicon process geometry to provide a balanced cost between LAN and the attached stations. Balanced cost is achieved by supporting both point to point and structured cabling environments in Top of Rack and End of Row topologies that are widely deployed in today’s data center.

Compatibility

Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.

a) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?

b) If the answer to a) is "no", supply the response from the IEEE 802.1 WG.

c) Compatibility with IEEE Std 802.3

d) Conformance with the IEEE Std 802.3 MAC

e) Managed object definitions compatible with SNMP

- As an amendment to IEEE Std802.3, the proposed project shall comply with IEEE Std802, IEEE Std802.1AC and IEEE Std802.1Q.
- As an amendment to IEEE Std802.3, the proposed amendment will conform to the full-duplex operating mode of the IEEE 802.3 MAC.
- By using the existing IEEE Std802.3 MAC protocol, the proposed amendment will maintain compatibility with the installed base of Ethernet nodes.
- The proposed amendment will extend clause 28 autonegotiation and Energy Efficient Ethernet to support the new PHYs.
- 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 Std802.3.1.

- <<do we need to mention xxMII?)

Distinct Identity

Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.

Substantially different from other IEEE 802.3 specifications / solutions.

- There is no standard that supports Ethernet over structured twisted pair cabling at a data rates of 25 Gb/s and 40 Gb/s. The IEEE P802.3bq project will define a single 40 Gb/s PHY and a single 25 Gb/s PHY over twisted pair cabling.

Technical Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:

a) Demonstrated system feasibility.
b) Proven similar technology via testing, modeling, simulation, etc.
c) Confidence in reliability.

- Component and cabling vendors have presented data indicating that 25 Gb/s and 40 Gb/s operation over twisted pair cabling is feasible with known techniques similar to those used in existing BASE-T standards. Presentations have provided analyses of PHY feasibility based on measurements of installed cabling and proposed new cabling types from TIA and ISO/IEC aimed at this application. Project objectives for distance have been chosen to balance feasibility, power, and broad market potential.
- 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. The proposed project will build on 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

Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications. Among the areas that may be addressed in the cost for performance analysis are the following:

a) Balanced costs (infrastructure versus attached stations).
b) Known cost factors.
c) Consideration of installation costs.
d) Consideration of operational costs (e.g., energy consumption).
e) Other areas, as appropriate.

- The cost factors for BASE-T Ethernet components and cabling are well known and are extensible with high confidence.
- 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 target 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.