Adopted Criteria for Standard Development (CSD) 2.5 Gb/s and 5 Gb/s Ethernet over Backplane ~~and Copper Cable~~

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'.

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.
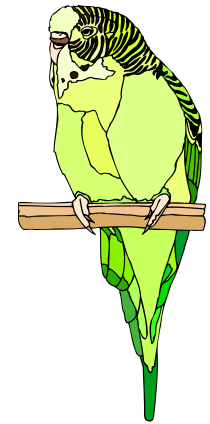
The 5 Critters

| Broad Market Potential | Compatibility | Distinct Identity | Technical Feasibility | Economic Feasibility |

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, large enterprise, and to cloud services. There is a need to support the vast cloud storage that uses object access and high capacity rotational storage devices (HDDs).

- An Ethernet data rate of 2.5 Gb/s and 5 Gb/s enables cost effective interconnect solution enabling HDD based object storage devices and systems.

- 61 participants attended the "2.5 Gb/s and 5 Gb/s Ethernet on Backplane and TwinAxial cables" Call-For-Interest, 53 individuals indicated support, and 20 individuals representing at least 15 companies indicated that they would participate in the standardization efforts. It is anticipated that there will be sufficient participation to effectively complete the standardization process including representatives from end-users, equipment manufacturers and component suppliers.

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 IEEE Std 802.3 MAC

  e) Managed object definitions compatible with SNMP.

- As an amendment to IEEE Std 802.3, the proposed project shall comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q.

- As an amendment to IEEE Std 802.3, the proposed PHY types shall be compatible with IEEE 802.3.

- By using the existing IEEE Std 802.3 MAC protocol, the proposed amendment will maintain compatibility with the installed base of Ethernet nodes.

- 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 Std 802.3.1.

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 are no existing standards, or projects developing standards, addressing the specification of Ethernet PHYs operating at 2.5 Gb/s and 5 Gb/s speed over ~~channels such as~~ backplanes ~~and twinaxial copper cables~~.

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.

- Systems based upon 2.5 Gb/s and 5 Gb/s technology have been demonstrated in operational networks.

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

- Component technologies of 1 Gb/s and 10 Gb/s backplane and copper cable have demonstrated sufficient implementation feasibility in volume production.

- The reliability of components for 1 Gb/s, and 10 Gb/s Ethernet has been established 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 Ethernet components and systems are well known.

- Prior experience in the development of 10 Gb/s technology for Ethernet, and maturity observed in 1 Gb/s technology establishes that the specifications developed by this project will entail a reasonable cost for the resulting performance.

- In consideration of installation costs, the project is expected to use proven and familiar media.

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

- 2.5 Gb/s and 5 Gb/s Ethernet interfaces will provide optimal balance of system cost, component cost, and energy use for the respective sustained bandwidth needs.

- Energy Efficient Ethernet will reduce the operational costs and the environmental footprint