

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 4.5 ‘Criteria for Standards Development’ of the ‘IEEE 802.3 Ethernet Working Group Operations Manual’.

The following are the CSD Responses in relation to the IEEE P802.3dw 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.
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- ~~• The definition of protocol-independent managed objects will be part of this project. In addition, it is expected that the protocol-specific definition of managed objects will be added through IEEE 802.3 activities, e.g., YANG Open Source project.~~
 - The definition of protocol independent managed objects, to be included in Clause 30 of IEEE Std 802.3, will be part of this project.

Coexistence

A WG proposing a wireless project shall prepare a Coexistence Assessment (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? (yes/no)**
- b) If not, explain why the CA document is not applicable.**

- No. 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.

Broad sets of applicability:

Numerous devices connected by Ethernet require more than 90 W currently available from Power over Ethernet (PoE) at data rates from 10 Mb/s to 100s of Gb/s. FMP expands upon the success of PoE by bringing Ethernet and power to applications requiring greater than 100 W. Examples include 5G transmitters, distributed antenna systems, remotely-powered PoE switches, small and large consumer appliances, HVAC units, EV chargers, and data center equipment.

Multiple vendors and numerous users:

At the Call for Interest, 19 individuals from 14 affiliations indicated they would support this project. The responding individuals include subject matter experts with experience in infrastructure, silicon, cabling, connector, and test equipment vendors.

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 Standards Committee.

- 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**
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- a) The proposed standard will comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q.
 - b) Answer was yes, NA
 - c) Changes to existing 802.3 data interfaces may be required.
 - d) Any changes will conform to the IEEE Std 802.3 MAC

By utilizing the existing IEEE Std 802.3 MAC protocol, this proposed amendment will maintain compatibility with the installed base of Ethernet nodes. (response for (c & d))

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 other IEEE standards that define interoperability for Fault Managed Power Systems, nor that define coexistence of FMP and Ethernet in the same cable.

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.**
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- a) There are at least four vendors that offer systems that have a Fault Managed Power (FMP) listing (or are attempting an FMP listing). There are others in development. It is, however, not known if any of these systems are interoperable.
 - b) Laboratory testing has been presented to the Study Group showing an FMP implementation compatible with Ethernet.
 - c) Published reports indicate continued operation of well over 1000 installation sites, some dating back to the 2010s.

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) Known cost factors.
 - b) Balanced cost factors.
 - c) Consideration of installation costs.
 - d) Consideration of operational costs (e.g., energy consumption).
 - e) Other areas, as appropriate.
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- a) The power distribution equipment proposed in this project uses components found in traditional AC or DC power supplies. The costs are well understood in those markets, and this technology will need to meet similar cost structures.
 - b) It is anticipated that the cost burden will fall on the power supply (transmitter) and only an incremental cost adder for the load (receiver), similar to, and compatible with, how a network bridge may bear a greater cost burden than an edge device.
 - c) These systems can use cabling and installation practices similar to structured cabling used for PoE. Installation is simpler than a traditional AC circuit while providing enhanced personnel and property protection. Additionally, a higher voltage enables using smaller conductors compared to traditional AC installations.
 - d) In general, these systems are DC based and can benefit from one high efficiency rectification stage when supplied from AC mains versus disparate AC/DC conversions at each load. As many Fault Managed Power Systems are DC native, they pair well with renewable power sources and battery energy storage systems.
 - e) No other areas to discuss.