IEEE 802 LAN/MAN STANDARDS COMMITTEE (LMSC)

CRITERIA FOR STANDARDS DEVELOPMENT (CSD)

Based on IEEE 802 LMSC Operations Manuals approved 15 November 2013
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P802.1CBcv, Standard for Local and metropolitan area networks – Frame Replication and Elimination for Reliability Amendment: Information Model, YANG Data Model and Management Information Base Module

1. IEEE 802 criteria for standards development (CSD)

The CSD documents an agreement between the WG and the Sponsor that provides a description of the project and the Sponsor's requirements more detailed than required in the PAR. The CSD consists of the project process requirements, 1.1, and the 5C requirements, 1.2.

1.1 Project process requirements

1.1.1 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.

This project will use method a)

1.1.2 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? (yes/no)
b) If not, explain why the CA document is not applicable.

This project is not a wireless project

1.2 5C requirements

1.2.1 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.

The current document has no standard means for accessing the managed objects, which is an impediment to the standard's market potential. There are currently two methods for accessing managed objects in common use, MIB modules and YANG modules. MIBs have the lion's share of the current market, but are steadily being replaced by YANG. Both are required to enable the potential expressed in the base PAR. The base document's BMP response follows:

a. Redundant topologies are common in many industrial networks such as Industrial Automation, Energy Automation, Rail Systems. Growth rate of redundant systems is much higher than the growth of communication in general. Redundant topologies are also used in automotive in-vehicle networks for safety critical control applications and ring topologies are proposed for automotive backbone applications. These applications would significantly benefit from frame replication and duplicate frame elimination in order to support seamless availability with network segment protection.
   Professional AV requires error protection as well. This is accomplished today by duplicating the complete network infrastructure which is costly and sometimes not as robust as required. Additionally, every AV application which needs audio/video transmissions with seamless availability benefits from the proposed amendment.

b. 60 million in 2010 (56~70 million per annum from 1960's till now) cars and light-trucks/SUVs sold per year. In-vehicle networking is expected to reach >15% in 2011 and grow. With an assumption of 5 Ethernet nodes/vehicle and assuming 60 million vehicles/year, potential vehicle market served at 15% adoption would yield 45+ million nodes (plus 45+ million Switch ports). The number of existing Ethernet Switch ports is ~400 million/year, split 35%:60%:5% FE/GE/10+GE in 2011.
   Thus, a potential for 15% Ethernet market expansion as adoption occurs in automotive.
   Industrial Automation – The number of industrial communication ports sold worldwide is 24 million per year in 2010. This is expected to grow to 40 million per year in 2014. Additional markets served with these standards are energy (e.g. power substation power controllers) and avionics.

1.2.2 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.

a. This amendment will maintain conformance to IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q.

b. Not applicable.

The review and response is not required if the proposed standard is an amendment or revision to an existing standard for which it has been previously determined that compliance with the above IEEE 802 standards is not possible. In this case, the CSD statement shall state that this is the case.

1.2.3 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.

No other IEEE 802 standard defines management capabilities for IEEE 802.1CB.

1.2.4 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.

a. The function is similar in complexity to existing management functions in IEEE 802.1Q which have been successfully implemented.

b. Other 802 standards are providing or developing management via MIB and YANG.

1.2.5 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.

a. Management using YANG or MIB utilizes a balance between end station and infrastructure capabilities; the balance will be similar to that of existing management methods.

b. The cost factors will be similar to those of existing management methods.

c. This project adds the YANG and MIB capabilities to 802.1CB as a complete management solution. This reduces the need for multiple proprietary management platforms and thus reduces installation cost.

d. This project adds the YANG and MIB capabilities to 802.1CB as a complete management solution. This reduces the need for multiple proprietary management platforms and thus reduces operational cost.