P802.1Qca

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Type of Project: Amendment to IEEE Standard 802.1Q-2011
PAR Request Date: 12-Sep-2012
PAR Approval Date:
PAR Expiration Date:
Status: Unapproved PAR, PAR for an Amendment to an existing IEEE Standard

1.1 Project Number: P802.1Qca
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Media Access Control (MAC) Bridges and Virtual Bridge Local Area Networks – Amendment: Path Control and Reservation

3.1 Working Group: Higher Layer LAN Protocols Working Group (C/LM/WG802.1)
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3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM)
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4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 11/2014
4.3 Projected Completion Date for Submittal to RevCom: 10/2015

5.1 Approximate number of people expected to be actively involved in the development of this project: 40
5.2.a. Scope of the complete standard: This standard specifies Media Access Control (MAC) Bridges that interconnect individual Local Area Networks (LANs), each supporting the IEEE 802 MAC service using a different or identical media access control method, to provide Bridged Local Area Networks and Virtual LANs (VLANs).
5.2.b. Scope of the project: This project extends the application of Intermediate System to Intermediate System (IS-IS) to control bridged networks (beyond the capabilities of Shortest Path Bridging) and specifies additional protocols, procedures and managed objects. The new standard will provide explicit path control, bandwidth and stream reservation, redundancy (protection or restoration) for data flows and distribution of control parameters for time synchronization and scheduling.
5.3 Is the completion of this standard dependent upon the completion of another standard: No
5.4 Purpose: MAC Bridges, as specified by this standard, allow the compatible interconnection of information technology equipment attached to separate individual LANs.
5.5 Need for the Project: There is no control protocol that integrates the required control features. The new control protocol will provide explicit forwarding path control thus enabling the use of non-shortest paths. It will also integrate a tool for bandwidth and stream reservation along the forwarding path. Resiliency control mechanisms will be also provided for the data traffic. In addition, the new standard will support carrying control information using IS-IS for time synchronization and scheduling.
5.6 Stakeholders for the Standard: Users, Vendors, IC developers, administrators, designers, customers, and owners of Provider Backbone Bridged Networks, Carrier Ethernet Networks, Data Center networks, Automotive networks, Industrial networks, Audio/Video and Residential systems requiring optimized bandwidth usage and/or redundancy.

Intellectual Property
6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No
6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

7.1 Are there other standards or projects with a similar scope?: No

8.1 Additional Explanatory Notes (Item Number and Explanation):

P802.1Qca Criteria for Standards Development (Five Criteria)

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.
   The application of Ethernet services and technology across data centers, metropolitan, automotive (vehicle) and industrial networks is large and growing business. TLV extensions to IS-IS could provide a unified control base for bridged networks and enable even wider spread by means of providing missing control features.

b) Multiple vendors and numerous users.
   A large body of vendors and users have a requirement for IEEE 802.1Q in data center, metro, automotive and industrial networks.

c) Balanced costs (LAN versus attached stations).
   This project does not materially alter the existing cost structure of bridged networks. Attached stations would not be aware of the operations by transit bridges

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.

a) Does the PAR mandate that the standard shall comply with IEEE Std 802, IEEE Std 802.1D and IEEE Std 802.1Q?
   This is an amendment to 802.1Q, which defines bridging and will be internally consistent.

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?

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 LMSC standards.
This is an amendment to 802.1Q the only standard for VLAN aware bridges.

b) One unique solution per problem (not two solutions to a problem).
There is no standard using link state control which allows coexistence on the same network of shortest path bridging and explicit path selection, and which also supports bandwidth and stream reservation, resiliency for data traffic, and carrying control information for time synchronization and scheduling.

c) Easy for the document reader to select the relevant specification.
This project will amend only the IEEE 802 standard defining VLAN aware bridges.

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.
The function is similar in complexity to existing functions in 802.1Q and 802.1aq, which have been successfully implemented.

b) Proven technology, reasonable testing.
The main concepts are proven and SPB is a proven technology. Compliance with the project can be tested using straightforward extensions of existing test tools for bridged networks.

c) Confidence in reliability.
The reliability of the enhancements will be not measurably worse than that of existing SPB.

Coexistence of IEEE 802 LMSC wireless standards specifying devices for unlicensed operation
- A WG proposing a wireless project is required to demonstrate coexistence through the preparation of a Coexistence Assurance (CA) document unless it is not applicable.
- The WG will create a CA document as part of the WG balloting process.
- If the WG elects not to create a CA document, it will explain to the Sponsor the reason the CA document is not applicable.

Not applicable.

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.
   This project introduces no hardware costs beyond the minimal and well-known resources consumed by an additional software protocol whose requirements are firmly bounded.

b) Reasonable cost for performance.
   The cost of upgrading software and configuring the protocol is reasonable, given the improvement in the applicability of bridged networks, e.g. for time aware or mission critical applications.

c) Consideration of installation costs.
   The cost of installing enhanced software, in exchange for improved network performance, is familiar to vendors and users of bridged networks.