

Project : P802.1ag

**Title : Standard for Local and Metropolitan Area Networks –
Virtual Bridged Local Area Networks – Amendment 5:
Connectivity Fault Management**

Scope:

This standard specifies protocols, procedures, and managed objects to support transport fault management. These allow discovery and verification of the path, through bridges and LANs, taken for frames addressed to and from specified network users, and isolation of a fault to a specific bridge or LAN.

Purpose :

Bridges are increasingly used in networks operated by multiple independent organizations, each with restricted management access to each others' equipment. This standard will provide capabilities for identifying and isolating failures in such networks, including "ping" and "traceroute" equivalents.

Five Criteria :

1. Broad Market Potential

A standards project authorized by IEEE 802 shall have a broad market potential. Specifically, it shall have the potential for:

- a) Broad sets of applicability.
 - b) Multiple vendors and numerous users
 - c) Balanced costs (LAN versus attached stations)
1. Public networks represent a new and very broad application space for IEEE802 technologies and specifically for Provider Bridges (P802.1ad). Operators of such networks require path tracing, connectivity verification and fault isolation tools to support established operational practice.
 2. There is growing interest in the use of such tools within enterprise networks, for use by individuals and network maintenance organizations. The familiarity of the potential customer base with IP "ping" and "traceroute", together with the extensive use made of these simple tools to support monitoring and initial fault isolation, is expected to lead to early and widespread deployment of the proposed standard.
 3. Liaison interest and support for the project has been voiced by ITU study groups and industry groups, including the Metro Ethernet Forum, that represent many potential users and vendors of equipment that would make use of the proposed standard.

2. Compatibility

IEEE 802 defines a family of standards. All standards shall be in conformance with the IEEE 802.1 Architecture, Management and Interworking documents as follows: 802. Overview and Architecture, 802.1D, 802.1Q and parts of 802.1f. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with 802.

Each standard in the IEEE 802 family of standards shall include a definition of managed objects which are compatible with systems management standards.

1. As a supplement to IEEE Std 802.1, the proposed project will remain in conformance with the 802 Overview and Architecture.
2. As a supplement to IEEE Std 802.1, the proposed project will remain in conformance with 802.1D, 802.1Q, 802.1f.
3. Managed objects will be defined consistent with existing policies and practices for 802.1 standards.

3. Distinct Identity

Each IEEE 802 standard shall have a distinct identity. To achieve this, each authorized project shall be:

- a) Substantially different from other IEEE 802 standards.
 - b) One unique solution per problem (not two solutions to a problem).
 - c) Easy for the document reader to select the relevant specification.
1. There is no existing standard that provides the envisaged capabilities for bridged networks.
 2. There are issues, unique to the way that Virtual Bridged Local Area Networks operate and can fail, to be addressed in providing reliable and non-disruptive fault management at acceptable implementation cost. 802.1 developed the bridge standards, and is recognized by other standards groups as uniquely possessing the expertise to determine the impact of proposed fault management techniques (a) on bridge implementations, and (b) on the operation of bridge networks while failure and reconfiguration is in progress and fault management tools are most likely to be used.
 3. Technical liaison and joint membership has already been established with other groups engaged in standards development and selection in this area to facilitate cooperation and non-duplication.
 4. The scope of the proposed project deliberately excludes service level agreements, service level performance verification and management, or provisioning of services. These subjects are under active discussion in other standards developing organizations.
 5. Incorporation of the results of this project within the 802.1Q standard, encompassing VLANs and Provider Bridges, will make the proposed standard readily accessible and draw the attention of the user community.

4. 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.
 - b) Proven technology, reasonable testing.
 - c) Confidence in reliability.
1. There is widespread positive experience in the use of the IP “ping” and “traceroute” tools that will be readily applicable to the proposed project.

5. 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.
 - b) Reasonable cost for performance.
 - c) Consideration of installation costs.
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1. Experience with IP “ping” and “traceroute” tools shows that such tools can be designed to have minimal additional equipment cost.
 2. Moreover the tools can be incrementally deployed, and thus do not incur large one time capital expenditures before any benefits are realized.
 3. Such diagnostic tools have been proven to reduce the overall cost of a network by reducing operational complexity.