Multiple I-SID Registration Protocol (MIRP)

Proposal for PAR and 5 Criteria

Version 1

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Project Authorization Request

Title

- PAR for an amendment to an existing Standard 802.1Q-2005
- P802.1Qbc (or Qbd, etc., as appropriate)
- IEEE Standard for Local and Metropolitan Area Networks---Virtual Bridged Local Area Networks - Amendment: Multiple I-SID Registration Protocol (MIRP)

Scope

- This standard specifies protocols, procedures, and managed objects to support a new Multiple Registration Protocol (MRP) Application, the Multiple I-SID Registration Protocol (MIRP), to register Backbone Service Instance Identifiers (I-SIDs), and to signal the need to discard MAC address location information learned by an I-Component.

Purpose

- When topology changes occur in 802.1ad networks attached to an 802.1ah backbone network, an I-Component must signal to other potentially affected I-Components the need to forget certain learned associations between Customer MAC Addresses and I-Components' Backbone MAC Addresses. Also, an access cloud that has an I-tagged or double S-tagged connection to a Backbone network must signal both its requirements for specific services, and topology change events in those services. MIRP provides these capabilities.

Need

- The deployment of IEEE 802.1ah Provider Backbone Networks, including I-tagged connections between Provider Backbone Networks, has raised requirements for both signaling from I-Component to I-Component the need to forget MAC address associations, and for the signaling capabilities of MVRP, but on 24-bit I-SIDs. In the absence of MIRP, customer connections across a Provider Backbone Network can take several minutes to restore connectivity after a topology change in an access network.

Stakeholders

- Vendors, users, administrators, designers, customers, and owners of Provider Backbone Bridged Networks.

Other standards with a similar scope

- There are no standards solving this problem for IEEE 802.1Q bridges. A partial solution to this problem has been offered to the IETF in draft-sajassi-l2vpn-pbb-vpls-cmac-flush-00.txt, which serves to illustrate the need for a complete solution.

Five Criteria

Broad Market Potential

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

- Broad sets of applicability.

  The commercial provision of Ethernet services across metropolitan or larger networks is a large and growing business. Provider Backbone Networks are a significant part of this market.

- Multiple vendors and numerous users.

  Multiple bridge vendors offer similar, proprietary solutions to many customers.

- Balanced costs (LAN versus attached stations).

  This project does not materially alter the existing cost structure of bridged networks.

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.

  This PAR is for an amendment to 802.1Q, thus ensuring compatibility.

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

  Such a definition will be included.

Distinct Identity

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

- Substantially different from other IEEE 802 standards.

  This project will amend the only IEEE 802 standard defining VLAN bridged networks.

- One unique solution per problem (not two solutions to a problem).

  There are no other standard solutions to this problem.

- Easy for the document reader to select the relevant specification.

  This project will amend the only IEEE 802 standard defining VLAN bridged networks.

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:

- Demonstrated system feasibility.

  The wide deployment of MVRP shows that the very similar MIRP is feasible.

- Proven technology, reasonable testing.

  MRP Applications, including MMRP and MVRP, is a proven technology. Compliance with the project can be tested using straightforward extensions of existing test tools for bridged networks.

- Confidence in reliability.

  The reliability of the modified protocols will be not be significantly worse than that of the existing MVRP.

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:

- 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.

- Reasonable cost for performance.

  The cost of upgrading software and configuring the protocol is reasonable, given the improvement in recovery time due to a network topology change.

- 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.