P802.1Qbp

Submitter Email: tony@jeffree.co.uk
Type of Project: Amendment to IEEE Standard 802.1Q-2005
PAR Request Date: 20-Jan-2011
PAR Approval Date:
PAR Expiration Date:
Status: Unapproved PAR, PAR for an Amendment to an existing IEEE Standard

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

2.1 Title: Standard for Local and Metropolitan Area Networks---Virtual Bridged Local Area NetworksAmendment: Equal Cost Multiple Paths (ECMP)

3.1 Working Group: Higher Layer LAN Protocols Working Group (C/LM/WG802.1)
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  Name: Anthony Jeffree
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3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM)
Contact Information for Sponsor Chair
  Name: Paul Nikolich
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Contact Information for Standards Representative
None

4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 03/2014
4.3 Projected Completion Date for Submittal to RevCom: 10/2014

5.1 Approximate number of people expected to be actively involved in the development of this project: 30
5.2 Scope: This standard specifies protocols, procedures and managed objects to support utilizing multiple possible next hop choices for frames within a single service in Shortest Path Bridging MAC Mode (SPBM) networks.

This is accomplished by applying one of a set of standard functions per frame at ingress and using the result as an input to all subsequent choices among multiple next hops as the frame transits the SPBM network. These functions are selected to ensure that frames belonging to the same data flow take the same path. Frames belonging to other flows can take other paths.

It is anticipated that a new Tag will be defined possibly including a Time to Live (TTL) field.

The standard defines Connectivity Fault Management (CFM) enhancements that can be used to proactively monitor and diagnose the paths that data takes through the network.

5.3 Is the completion of this standard dependent upon the completion of another standard: Yes
If yes please explain: This standard is dependent upon the completion of 802.1aq, Shortest Path Bridging (SPB), as ECMP is an extension of the capabilities of SPB. Including ECMP in the existing P802.1aq project would unnecessarily delay the completion of P802.1aq, which will soon be submitted for Sponsor ballot.

5.4 Purpose: This standard provides the additional capability to use many more equal cost paths than 802.1aq's current Equal Cost

Tree (ECT) mechanism due to improved scaling properties with respect to network diameter.

This standard would be used in conjunction with an 802.1aq based control plane and would use specific Base Virtual Local Area Network identifiers (B-VIDs) and new ECT-ALGORITHMs as defined by 802.1aq.
This standard may include multipath function information and may use time to live (TTL) loop mitigation. Corresponding new EtherTypes would be used to identify the new Tag formats.

It is expected that both the current 802.1aq ECT and ECMP would be used at the same time in the same network (for different traffic/service categories) but differentiated by B-VID.

This standard enhances Connectivity Fault Management (CFM) to monitor and diagnose the richer connectivity provided.

5.5 Need for the Project: As diameter and number of adjacencies grow the number of paths increases exponentially. In such richly connected networks ECMP in addition to ECT allows for better utilization in proportion to the state required.

TTL augments loop mitigation in the face of hardware, software and design failures.

An augmented SPBM with this capability addresses urgent customer requests to meet the above needs with a single protocol, a single data path and a unified Operations, Administration and Management (OA&M) suite.

5.6 Stakeholders for the Standard: Vendors, users, administrators, designers, customers, and owners of Provider Backbone Bridged Networks, Carrier Ethernet Networks or next generation data centers.

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

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7.1 Are there other standards or projects with a similar scope?: Yes
If Yes please explain: There are no IEEE standards solving this problem.

There are other projects/standards (TRILL, VPLS) that cover parts of the problem encompassed by this amendment but the scope of this standard is more complete than any of them.

and answer the following
  Sponsor Organization: IETF
  Project/Standard Number: RFC 5556, RFC 4761, 4762
  Project/Standard Date:
  Project/Standard Title: Transparent Interconnection of Lots of Links (TRILL)
Virtual Private LAN service (VPLS)
7.2 Joint Development
  Is it the intent to develop this document jointly with another organization?: No

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8.1 Additional Explanatory Notes (Item Number and Explanation):