PAR for P802.1Qdd Resource Allocation Protocol

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Introduction

- Previous contributions to RAP
  - requirements: new-chen-RAP-proposal-and-requirements-0517-v02.pdf
  - feature proposals: new-kiessling-RAP-poposal-and-features-0517-v01.pdf
  - white paper: tsn-chen-RAP-whitepaper-1117-v02.pdf

- The new document for RAP will be an amendment to 802.1Q, as a result of discussion at the Geneva interim.

- This presentation shows the draft PAR.

PAR Header

Type of Project: Amendment to IEEE Standard 802.1Q-2018

PAR Request Date: xx-xx-2018

PAR Approval Date:

PAR Expiration Date:

Status: Unapproved PAR, PAR for an Amendment to an existing IEEE Standard

1.1 Project Number: P802.1Qdd

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: Standard for Local and metropolitan area networks--Bridges and Bridged Networks

Amendment: Resource Allocation Protocol (RAP)

PAR Lifecycle

4.1 Type of Ballot:

Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot:

12/2021

4.3 Projected Completion Date for Submittal to RevCom

Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.:
10/2022

5.1 Approximate number of people expected to be actively involved in the development of this project:
30

PAR Scope

5.2.a. Scope of the complete standard:

This standard specifies Bridges that interconnect individual LANs, each supporting the IEEE 802 MAC Service using a different or identical media access control method, to provide Bridged Networks and VLANs.

5.2.b. Scope of the project:

This amendment specifies protocols, procedures and managed objects for a Resource Allocation Protocol (RAP) that uses the Link-local Registration Protocol (LRP) and supports and provides backwards compatibility with the stream reservation and quality of service capabilities, controls and protocols specified in IEEE Std 802.1Q. RAP provides support for accurate latency calculation and reporting, can use redundant paths established by other protocols, and is not limited to bridged networks.

PAR Dependency and Purpose

5.3 Is the completion of this standard dependent upon the completion of another standard: Yes

If yes please explain: This standard will make normative references to IEEE P802.1CS

5.4 Purpose:

Bridges, as specified by this standard, allow the compatible interconnection of information technology equipment attached to separate individual LANs.

PAR Need and Stakeholders

5.5 Need for the Project:

A signaling protocol that performs distributed and dynamic resource management and admission control is an essential component for automatic configuration in bridged LANs requiring latency and bandwidth guarantees. Current “Multiple Stream Reservation Protocol (MSRP)” is constrained by the capability of its underlying “Multiple Registration Protocol (MRP)” and does not efficiently support a large reservation database.

For use in distributed stream reservation, MSRP does not make use of all available Quality of Service provisions and does not support reservation for the streams in need of high availability by use of the technologies specified in IEEE Std 802.1CB.

The proposed amendment will address these issues.

5.6 Stakeholders for the Standard:

Developers, providers, and users of networking services and equipment for Industrial, Professional audio-video, automotive, consumer electronics and other systems requiring distributed stream reservation services for streaming of time-sensitive data.

PAR 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?: Yes

If yes please explain:

The Simple Network Management Protocol (SNMP) MIB will be assigned an Object Identifier (OID) based on the RA OID tutorial and IEEE Std 802.

The YANG Data Model will be assigned a Uniform Resource Name (URN) based on the Registration Authority URN tutorial and IEEE Std 802d.

The amendment will use the 802.1 Organizationally Unique Identifier (OUI) to create a globally unique application identifier as required by the Link-local Registration Protocol (LRP).

PAR Others

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

7.2 Joint Development

Is it the intent to develop this document jointly with another organization?: No

8.1 Additional Explanatory Notes:

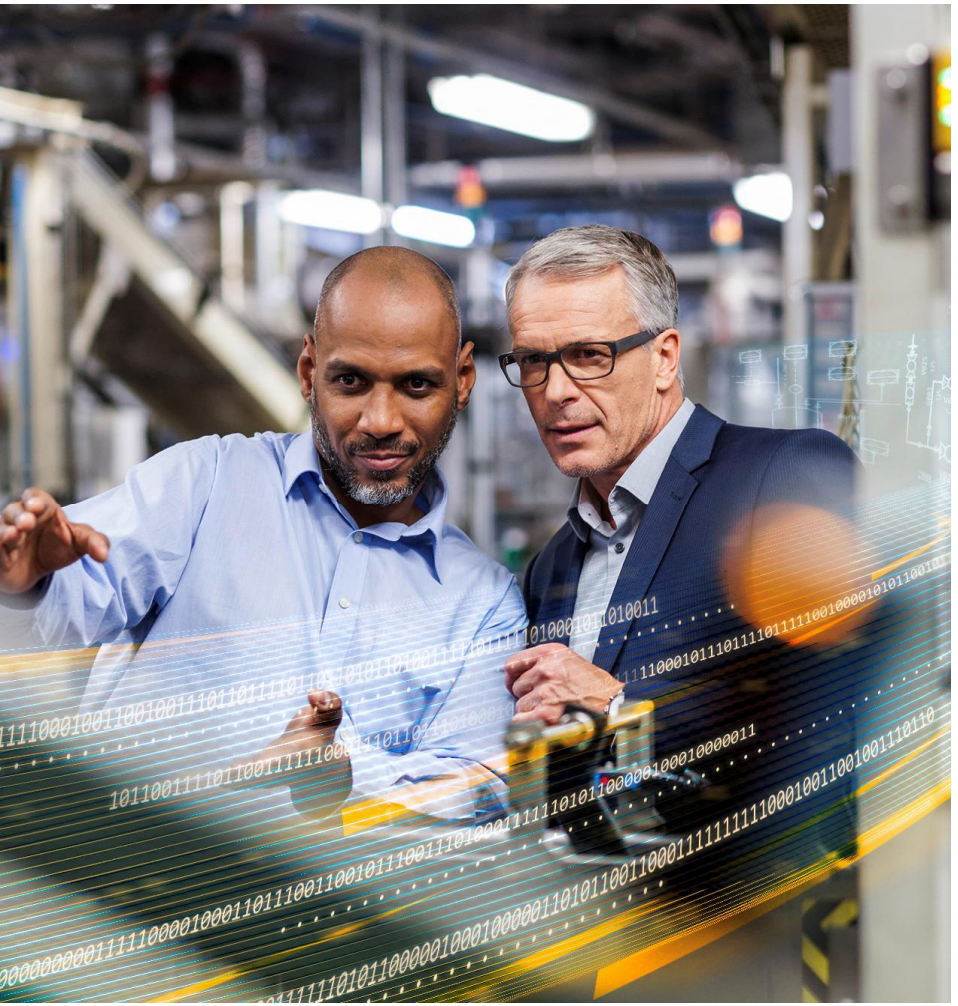
#5.2.b IEEE Std 802.1Q IEEE Standard for Local and Metropolitan Area Networks - Bridges and Bridged Networks

LRP is being specified in IEEE P802.1CS Draft Standard for Local and Metropolitan Area Networks: Link-local Registration Protocol

#6.1.b While 'YANG' (developed by the Internet Engineering Task Force) appears to be an acronym its expansion 'Yet Another Next Generation' is not meaningful. YANG is a widely-used standard that is relevant to the Registration Authority.

IEEE Std 802 IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture
IEEE Std 802d IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture Amendment 1: Allocation of Uniform Resource Name (URN) Values in IEEE 802 Standards
RA URN tutorial: http://standards.ieee.org/develop/regauth/tut/ieeeurn.pdf
RA OID tutorial: http://standards.ieee.org/develop/regauth/tut/oid.pdf

Thank You!



Objective

This amendment specifies protocols, procedures and managed objects for a Resource Allocation Protocol (RAP), which is an application for and running over the Link-local Registration Protocol (LRP) specified by IEEE Std 802.1CS. RAP provides distributed stream reservation by including:

- support not limited to end stations and bridges
- support for existing capabilities of Multiple Stream Reservation Protocol (MSRP) and provision for backwards compatibility
- support for all stream reservation classes and concurrent different transmission selection algorithms of IEEE Std 802.1Q
- support for flow classification and metering
- support for an accurate method of calculating and reporting latency for queuing algorithms suitable for time sensitive networking
- support for streams using redundant paths created by other standards
- use of IEEE Std 802.1Q clause 46.2 User/network configuration information