proposed PAR and CSD for a Local Address assignment protocol

Michael Johas Teener

mikejt@broadcom.com

Comments provided by
Roger Marks (EthAirNet Associates)
2015-03-10

Content and format

This presentation includes the text for a proposed PAR and corresponding CSD.

The PAR text uses light formatting for boilerplate and bold for new content.

The CSD uses a **blue box with white text** for the CSD questions and follows with the answers in black text on white background.

Title, etc.

1.1 Project Number: **P802.1_**

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: **Standard for Local and Metropolitan Area Networks: Local Addresses Assignment ~~Protocol~~**

3.1 Working Group: Higher Layer LAN Protocols Working Group (C/LM/WG802.1)

3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM)

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot:
11 **~~03~~/2016**

4.3 Projected Completion Date for Submittal to RevCom: **~~10/2016~~** 05/2017

Scope

protocols

5.2.a. Scope of the complete standard: **This standard specifies ~~a protocol~~, procedures, and management objects for the assignment of local addresses in IEEE 802 networks.**

5.2.b. Scope of the project: **n/a.**

Purpose and need

5.3 Is the completion of this standard dependent upon the completion of another standard: **yes, P802c amendment**

5.4 Purpose: **This standard specifies a way for ~~devices on~~ an 802 network to obtain ~~a~~ locally-unique ~~address~~ from a block of addresses derived from ~~either~~ a ~~CID or other~~ portion of the address space ~~defined~~ by ~~IEEE~~.**

[addresses]

[elements in]

[IEEE Std 802]

[specified]

5.5 Need for the Project: **Currently, global addresses are assigned to most IEEE 802 end ~~stations~~ and bridge ports. Increasing use of virtual machines and Internet of Things (IoT) devices could exhaust the global address space if global addresses are assigned. This project will define ~~a protocol~~ that automatically configures addresses in a range from a portion of the local address space. This will allow ~~virtual machines and IoT devices~~ to obtain a local address without local administration.**

[one or more protocols]

[network elements]

Stakeholders

5.6 Stakeholders for the Standard: **Developers, providers, and users of networking services and equipment for IoT (including Industrial Automation, Transportation networking, Smart Grid) and of operating systems, hypervisors and orchestration systems for virtual machines. This includes software developers, networking IC developers, bridge and NIC vendors, and users.**

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: **This protocol may require coordination with the IEEE Registration Authority.**

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 (Item Number and Explanation):

Managed objects

Describe the plan for developing a definition of managed objects. The plan shall specify one of the following:

    a) The definitions will be part of this project.

    b) The definitions will be part of a different project and provide the plan for that project or anticipated future project.

    c) The definitions will not be developed and explain why such definitions are not needed.

a) The definitions of managed objects will be part of this project.

Coexistence

A WG proposing a wireless project shall demonstrate coexistence through the preparation of a Coexistence Assurance (CA) document unless it is not applicable.

    a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no)

    b) If not, explain why the CA document is not applicable.

A CA document is not applicable because this ~~project~~ does not ~~use~~ wireless ~~spectrum~~

specify

operation.

standard

Broad market potential

Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:

    a) **Broad sets of applicability.**

    b) **Multiple vendors and numerous users.**

Today, every physical bridgeable port (e.g. IEEE 802.3 and 802.11) shipped consumes a Globally Unique MAC address. MAC address usage increased dramatically with the emergence of network ports on phones, tablets, set top boxes, etc.

Virtual ports need addresses assigned as they are created. Global addresses are not appropriate as consumption of global address space by such ephemeral devices could exhaust the address space. Proprietary protocols have been created to distribute addresses for virtual ports. ~~Some protocols have used Global MAC address blocks for these assignments because there was no mechanism for obtaining a Local MAC address block. Some have used a fixed or default block in the local address space.~~ Fibre Channel over Ethernet (FCoE) has standardized a protocol for distributing FCoE virtual port MAC addresses from blocks in the Local MAC address space.

Emerging usage for the Internet of Things (IoT) ports on sensors, actuators, lights, appliances, etc. could vastly increase address usage by physical ports. Most such devices would not need Globally Unique MAC addresses if there were protocols available to obtain a Local MAC address.
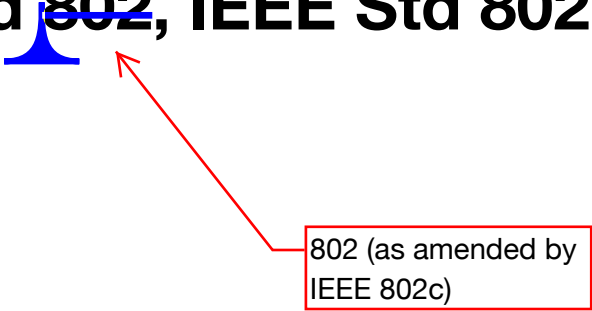
Compatibility

Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.

  a) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?

  b) If the answer to a) is no, supply the response from the IEEE 802.1 WG.

The review and response is not required if the proposed standard is an amendment or revision to an existing standard for which it has been previously determined that compliance with the above IEEE 802 standards is not possible. In this case, the CSD statement shall state that this is the case.

Yes, it will comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q.

802 (as amended by IEEE 802c)

Distinct Identity

Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.

There is no other IEEE 802 standard that defines a method for assigning addresses from ~~the~~ IEEE 802 local address space.

Technical Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:

a) **Demonstrated system feasibility.**

b) **Proven similar technology via testing, modeling, simulation, etc.**

Existing protocols including orchestration protocols for virtualization and the T11 FC-BB-6 standard on FCoE demonstrate that protocols to distribute or claim addresses in ~~the~~ Local Address space are feasible.

Economic Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications. Among the areas that may be addressed in the cost for performance analysis are the following:

  a) Balanced costs (infrastructure versus attached stations).
  b) Known cost factors.
  c) Consideration of installation costs.
  d) Consideration of operational costs (e.g., energy consumption).
  e) Other areas, as appropriate.

Existing protocols demonstrate that local address distribution or claiming procedures have economic feasibility and costs are known. CIDs are available from the RAC for a known cost.

Such protocols reduce installation cost by eliminating the need to configure addresses for virtual ports. Not needing a unique Global Address may slightly reduce the cost of ports on IoT devices.

There should be no significant impact on operational cost.