P802c/D0: Overview of Editor’s Draft

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Re: P802c/D0

Venue:
   Data Center Bridging Task Group, IEEE 802.1 WG, IEEE 802 Plenary, Dallas, USA, November 2015

Purpose:
   To introduce and explain P802c/D0, an Editor’s Draft for the P802c project.

Notice:
   This document represents the views of the author and is offered as a basis for discussion.
P802c/D0:
Overview of Editor’s Draft

Roger B. Marks
Technical Editor, P802c
Abstract

This contribution introduces and explains P802c/D0, an initial draft under the P802c project. The document is an Editor’s Draft aimed at creating a starting point for discussion.
Outline

• Project status and PAR highlights
• Draft structure
P802c Project Status

- Draft Amendment to IEEE Std 802-2014
- PAR Approval Date: 2015-06-11
- No substantive discussion in July or September
- 5.2.b. Scope of the project: The amendment will provide an optional local MAC address space structure to allow multiple administrations to coexist. This structure will designate a range of local MAC addresses for protocols using a Company Identifier (CID) assigned by the IEEE Registration Authority. Another range of local MAC addresses will be designated for assignment by local administrators. The amendment will recommend a range of local MAC addresses for use by IEEE 802 protocols.
Draft structure

• <<Editor’s note: Sorry I neglected to spell check.>>

• Frontmatter: pp. i-xiv

• Scope and Purpose
  • unchanged vs 802-2014; Editor’s notes spell out PAR elements, as an aid to the reader

• 3. Definitions, acronyms and abbreviations

• 8.2.2 Assignment of universal addresses

• 8.4 Local MAC addresses (primary content)

• 9. Protocol identifiers (Editor’s note)

• Bibliography: reference to RAC tutorial

• Annex E (informative) History: Editor’s note
8.2.2 Assignment of universal addresses

• Removed references to local MAC addresses and CID
• added pointer to the new 8.4, which covers these in detail
8.4 Local MAC addresses

- Proposes replacement of existing subclause (four sentences and a note) with an entirely new subclause including:
  - 8.4.1 concept and overview
  - 8.4.2 assignment protocols
  - 8.4.3 Extended Local Identifier [ELI]
  - 8.4.4 Standard Assigned Identifier [SAI]
  - 8.4.5 Administratively Assigned Identifier [AAI]
  - 8.4.6 Summary
  - 8.4.7 Assignment Requirements
8.4.1 Concept and overview

- Introduction and address uniqueness
- adds reference to Annex F.1.2 ("Duplicate MAC Addresses") of 802.1Q, in regard to possibility of non-unique address assignments in distinct VLANs, when bridges support Independent VLAN Learning
8.4.2 Assignment Protocols

- Presents notion of separate protocols being specified in separate subspaces so that they can be deployed on the same LAN.
Proposes three types of Local Identifier

- **Extended Local Identifier [ELI]**
  - **per PAR Scope**: *range of local MAC addresses for protocols using a Company Identifier (CID) assigned by the IEEE Registration Authority*

- **Standard Assigned Identifier [SAI]**
  - **per PAR Scope**: *range of local MAC addresses for use by IEEE 802 protocols.*

- **Administratively Assigned Identifier [AAI]**
  - **per PAR Scope**: *Another range of local MAC addresses will be designated for assignment by local administrators.*
8.4.3 Extended Local Identifier [ELI]

- per PAR Scope: designate a range of local MAC addresses for protocols using a Company Identifier (CID) assigned by the IEEE Registration Authority

- ELI-48 and ELI-64: similar to EUI-48 and EUI-64
  - use CID instead of OUI
  - restricted to the only quadrant of CID space that has already been allocated by IEEE RA
    - defines new Y bit and Z bit
    - specifies the quadrant as:
      - Y bit = 0
      - Z bit = 1
8.4.4 Standard Assigned Identifier [SAI]

- per PAR Scope: recommend a range of local MAC addresses for use by IEEE 802 protocols

- SAI-48 and SAI-64
  - Y bit = 1
  - Z bit = 1
  - additional differentiating bits will be specified in future IEEE 802 assignment protocols
8.4.5 Administratively Assigned Identifier [AAI]

• per PAR Scope: *Another range of local MAC addresses will be designated for assignment by local administrators.*

• AAI-48 and AAI-64
  • Y bit = 0
  • Z bit = 0
## 8.4.6 Summary

<table>
<thead>
<tr>
<th>local MAC address type</th>
<th>M bit</th>
<th>X bit</th>
<th>Y-bit</th>
<th>Z bit</th>
<th>Number of IEEE assigned bits (including I/G and U/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELI-48</td>
<td>I/G</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>24 (CID)</td>
</tr>
<tr>
<td>ELI-64</td>
<td>I/G</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>24 (CID)</td>
</tr>
<tr>
<td>SAI-48</td>
<td>I/G</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>SAI-64</td>
<td>I/G</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>AAI-48</td>
<td>I/G</td>
<td>1</td>
<td>0</td>
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<td>4</td>
</tr>
<tr>
<td>AAI-64</td>
<td>I/G</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>
8.4.7 Assignment Requirements

• Local MAC addresses assigned by a local administrator for use in a LAN should ensure that assignments are unique.

• For LANs in which local MAC addresses are assigned by multiple address assignment protocols, some things are required for compliance, including:
  • protocols shall avoid duplicate assignments
  • protocols shall assign only ELIs, SAIs, or AAIIs
  • The first three octets of an ELI are a CID
  • non-CID extension is assigned as specified by the assignee of that CID or a protocol specified by the assignee
Other

- 9. Protocol identifiers
  - Editor’s Note points out that RAC allows the use of CID in local protocol identifiers, but 802-2014 does not.
  - Material could be added, but might be out of scope.
- Bibliography: reference to RAC tutorial on EUI & CID
- Annex E (informative) History: Editor’s note points out that it may be useful to add a section on local MAC addresses; could be helpful in backward compatibility