IANA Considerations and IETF Protocol and Documentation Usage for IEEE 802 Parameters

draft-eastlake-rfc7042bis-08.txt

Donald Eastlake d3e3e3@gmail.com, Joe Abley, Li Yizhou
RFC 7042bis

• This draft is the next in a series of Best Current Practice RFCs that try to gather in one pace information on:
  • The use of IEEE 802 parameters in IETF protocols.
  • Information on the IANA Considerations for IEEE 802 parameters that are
    • Under the IANA OUI or
    • From other blocks allocated to IANA by IEEE.
  • Other closely related information.
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• This document includes and updates specification of the following:
  • Assignment under the IANA OUI (Organization Unique Identifier) 00-00-5E of
    • 48 and 64-bit MAC address addresses
      • Unicast: 00-00-5E-xx-xx-xx, 00-00-5E-xx-xx-xx-xx-xx
      • Multicast: 01-00-5E-xx-xx-xx, 01-00-5E-xx-xx-xx-xx-xx
    • (64-bit MAC addresses are used by IEEE Std. 802.15.4 (ZigBee),
      IEEE Std. 1394 (FireWire/i.Link), and Infiniband)
    • (IEEE can also assign longer prefixes for those needing fewer MACs.)
  • IANA assignment of OUI Extended Ethertypes 88-B7-00-00-5E-xx-xx
  • Address Family Numbers (AFNs) and DNS RR Types for MAC addresses.
And it adds specification of CBOR tags for MAC addresses and Ethernet protocol identifiers.

It adds information as follows:

- The IEEE 802 Structured Local Address Plan (SLAP) and Company IDs (CID)
- Pointers to specification of IANA Considerations for
  - The blocks of IEEE 802.1Q Continuity Fault Management (CFM) code points allocated to IANA (RFC 7319)
  - The registry set up for “vendor specific” Link Layer Discovery Protocol codepoint under the IANA OUI (RFC 8520, draft-acee-idr-lldp-peer-discovery)
- IESG Statement on requesting Ethertypes from the IEEE Registration Authority
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• Because it can make sense to allocate large blocks of MAC addresses to a single use (1/2 of IANA multicast MACs allocated to IPv4 multicast and 1/8 to MPLS multicast), there is a special assignment procedure. “Small-Medium” blocks are decided by Expert. “Large” blocks can be refused by expert or can be approved (or punted) by Expert with IESG making final decision.

<table>
<thead>
<tr>
<th>Type</th>
<th>Small-Medium Block</th>
<th>Large Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>48-bit MAC</td>
<td>1 to 2**16</td>
<td>2<strong>17 to 2</strong>24</td>
</tr>
<tr>
<td>64-bit MAC</td>
<td>1 to 2**28</td>
<td>2<strong>29 to 2</strong>40</td>
</tr>
</tbody>
</table>
IEEE 802 Structured Local Address Plan (SLAP)

• 48-bit MAC Address
  
  0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7
  +--------------------------------+--------------------------+
  | . . . . Z Y X M | . . . . . . . . . . |
  +--------------------------------+--------------------------+
  octets 0&1
  
  +--------------------------------+--------------------------+
  | . . . . . . . . . . . . . . . . . |
  +--------------------------------+--------------------------+
  octets 2&3
  
  +--------------------------------+--------------------------+
  | . . . . . . . . . . . . . . . . . |
  +--------------------------------+--------------------------+
  octets 4&5
  
• M = Multicast/Broadcast bit
• X = Former “Local” bit
IEEE 802 Structured Local Address Plan (SLAP)

- SLAP optionally divides the former Local MAC address space into four quadrants as follows:

<table>
<thead>
<tr>
<th>Z</th>
<th>Y</th>
<th>X</th>
<th>SLAP Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Administratively Assigned — Equivalent to former Local</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td>Extended Local — Assigned to CID holder</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>Reserved</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Standard Assigned — Assigned via a local protocol (IEEE 802.1CQ, RFCs 8947 &amp; 8948)</td>
</tr>
</tbody>
</table>

- Companies indicated by 24-bit identifier with the M bit zero
  - OUI (Organizational Unique Identifier) X = 0, Z & Y are part of the Identifier
    - Includes $2^{24}$ unicast and $2^{24}$ multicast MAC addresses
  - CID (Company ID) X = 1, Y = 1, Z = 0, include MAC addresses if SLAP is in use on local network
    - Like IETF deprecated “CF” series (RFC 2153) of “CID”s with M=X=Y=Z=1 for use in PPP.
- IPv6 multicast uses MACs with top byte 0x33 (Administratively Assigned) Z=Y=0, X=M=1.
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• Includes the specification of reserved documentation/example codepoints. (RFC 2606, RFC 5737)
• Assorted clarifications and minor changes.
I suggest either
  • Acceptance and processing by INTAREA or
  • AD sponsorship.
END

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