P802.1Qat status

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14 January 2009
Topics

• What’s new in D2.0
• What’s coming in D2.1
• Next ballot
• What’s left for Qat
• Review P802.1Qat/D2.0
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Focus

• All outstanding ‘Q’ addendums renumbered
• Reorganized & rewritten for clarity
  – Based off of implementers questions
• First DMN defined (CSN)
• MSRPDU fields completely defined
• Define Service Primitives
• Enough details to build interoperable prototypes
Designated MSRP Node (DMN)
MSRPDU (all) Listener Message

- AttributeType=3
- Attribute Length=8
- AttributeListLength=14

VectorHeader
- LeaveAllEvent 3 bits
- NumberOfValues 13 bits
- FirstValue
  - Listener Ready
  - Listener Ready Failed

VectorAttribute
- ThreePackedEvents

VectorFourPacked
- FourPackedEvents
  - DeclarationType 2-bits
    - First Declaration
    - Second Declaration
    - Third Declaration
    - Fourth Declaration
- EndMark 16 bits 0x0000
MSRPDU FirstValue components

FirstValue

<table>
<thead>
<tr>
<th>Octet #</th>
<th>1 - 7 - 8</th>
<th>Stream ID structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAC Address</td>
<td>Unique ID</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Octet #</th>
<th>9 - 15 - 16</th>
<th>DataFrameParameters structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>destination_address</td>
<td>vlan_identifier</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Octet #</th>
<th>17 - 21 - 24</th>
<th>TSpec structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bandwidth</td>
<td>Frame Rate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Octet #</th>
<th>25</th>
<th>PriorityAndRank structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data Frame Priority (3 bits)</td>
<td>Rank (5 bits)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Octet #</th>
<th>26 - 29</th>
<th>AccumulatedLatency structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accumulated Latency</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Octet #</th>
<th>30 - 38</th>
<th>Failure Information structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bridge ID</td>
<td>Failure Code</td>
</tr>
</tbody>
</table>

**Format of the components of the MSRPDU FirstValue**
Service Primitives

Talker SR Station host application

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MSRP application + MAD + MAP

---

Listener SR Station host application

---

MSRP application + MAD + MAP

---

PHYSICAL MEDIA

MSRPDU

TalkerAdvertise.join or TalkerFailed.join

ListenerReady.join or ListenerReadyFailed.join or ListenerAskingFailed.join

TalkerAdvertise.leave or TalkerFailed.leave

ListenerReady.leave or ListenerReadyFailed.leave or ListenerAskingFailed.leave

REGISTER_STREAM.request

REGISTER_STREAM.indication

DEREGISTER_STREAM.request

DEREGISTER_STREAM.indication

REGISTER_ATTACH.request

REGISTER_ATTACH.indication

DEREGISTER_ATTACH.request

DEREGISTER_ATTACH.indication
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Qat ↔ Qav Forwarding

- **P802.1Qat MSRP**
  - Dynamic Reservation Entries
    - o MAC address
    - o VID
    - o Portmap
    - P802.1Qav Clause 8.8.7

- **P802.1ak MMRP**
  - MAC Address Registration Entries
    - P802.1ak Clause 8.8.4

- **Dynamic VLAN Registration Entries**
  - P802.1ak Clause 8.8.5

**Attribute Registrations**

<table>
<thead>
<tr>
<th>Talker</th>
<th>Advertise</th>
<th>Failed</th>
</tr>
</thead>
<tbody>
<tr>
<td>(none)</td>
<td>Filtering</td>
<td>Filtering</td>
</tr>
<tr>
<td>Filtering</td>
<td>Forwarding</td>
<td>Filtering</td>
</tr>
<tr>
<td>Filtering</td>
<td>Forwarding</td>
<td>Filtering</td>
</tr>
<tr>
<td>Filtering</td>
<td>Filtering</td>
<td>Filtering</td>
</tr>
</tbody>
</table>

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Qat $\leftrightarrow$ Qav Forwarding & Queuing

- **Dynamic Reservation Entries**
  - Qav clause 8.8k, t, u, v
  - Updated by SRP reservations
  - Allows Qav to control Filtering/Forwarding

- **reservedBandwidth(N), where N=Traffic Class**
  - Qav Clause 34.3b2
  - One per port, per Traffic Class
  - Updated by SRP reservations
  - Allows Qav to calculate idleSlope
Qat $\iff$ Qav Queuing (continued)

• **bandwidthAvailabilityChanged**
  - Qav clause 34.3.2
  - Informs Qat of a bandwidth change
    • Management change (**deltaBandwidth**(N))
    • 802.11 related change (**portTransmitRate**)

• **perFrameOverhead**
  - Qav clause 34.4
  - Per port overhead required my media
  - Used by SRP for bandwidth calculations
Other D2.1 changes

• Annex Q (informative) MSRP MAP Algorithm
  – Replace 35.2.5 & 35.2.6 with one or two page description
  – Rework with latest Qav changes

• 802.11 DMN?
Outstanding questions

Where to measure latency?
1 – Input to A/D (parameter in REGISTER_STREAM.request)
2 – Input to I2S (1722 timestamps are done here)
3 – Entrance to the cloud (currently defined in Clause 35.2.2.8.6)
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Clauses to be completed

• Clause 5. Conformance
• Clause 7. Principles of network operation
• Clause 12. Bridge management
• Clause 17. Management Information Base (MIB)
Clauses to be completed (cont’d)

• Clause 35. MSRP
  – Three-step (Talker Pruning) still necessary?
    • Management controlled option
      – Stream ID based: “Don’t forward Talker attributes unless outbound port has already registered a Listener attribute”
      – Stream DA based: “Don’t forward Talker attributes unless outbound port has an MMRP registration for Stream DA”
  – Handling exceptions
    • Two Talkers providing same Stream ID
    • Two Talkers using same multicast Stream DA
Annex tasks

- Annex I (informative) - PICS
- Annex Z (informative) – AVB Assumptions
Questions?
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