MAAP Integration into P802.1CQ

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P802.1CQ and MAAP

- P802.1CQ: Multicast and Local Address Assignment
  - https://1.ieee802.org/tsn/802-1cq/
- IEEE Std includes MAAP
  - MAC Address Acquisition Protocol (claiming only)
- Liaisons to IEEE 1722, 2019-03, 2019-07, 2020-07
- Liaison from IEEE 1722, 2019-07-03
  - *During the development of MAAP, it was realized by the group, that IEEE 802.1 would be a better keeper of this standard if it ever needed to be enhanced and/or improved.*
  - *Since MAAP is deployed, we need to insure backwards compatibility. To this end IEEE 1722 is willing to help review your documents to insure this. We also understand there are concerns about the ownership of the 1722 OUI and Ethertype.*

MAAP in P802.1CQ/D05

- First Task Group Ballot (D0.5) ended 2020-07-31
  - Editor drafted resolutions to 77 comments <https://commentary.ethair.net>
- Incorporates MAAP, from IEEE Std 1722
  - in a normative Annex B, aligned with 1722 Annex B
  - new features are specified in a new protocol “PALMA”
    - “Protocol for Assignment of Local and Multicast Addresses”
- Several comments address MAAP integration
  - 24, 27, 48, 75, 76, 77
  - some issues raised:
    - confusing conformance: PALMA, MAAP, or both
    - backward compatibility
  - progress was made in prior comment resolution, especially on backward compatibility
  - offline discussion with 1722 participants indicated that further integration is needed

New Features beyond MAAPv1

- More flexible address sets
  - multicast and local unicast assignment
    - including both assignments simultaneously
  - 64-bit address assignments
  - mask-based address ranges
  - other improvements
- Assignment to devices that do not yet have an assigned unicast source address
- Server-based assignment
  - device makes a claim
  - server, if present, hears claim and may respond with offer
- We have determined that these features can be included in MAAPv2, without a need for PALMA
- Reviewed with IEEE 1722 WG, 2020-10-20

Directions in Comment Resolution

1. move Annex B into body of draft
2. replace PALMA with enhanced MAAP
   - PDU format aligned with 1722
   - new maap_version=2 features
   - additional MAAP message_types
3. PROBEv2 is heard by legacy MAAP devices
   - can defend a claim
   - also heard by server; responds with offer

more details follow…

1. move Annex B into body of draft

- In P802.1CQ/D0.5, MAAP is in normative Annex B
  - –preserves all subclause numbering in 1722 Annex B
  - –with some corrections made by editor

- Moving it into the main body requires renumbering

- New version will entail major editing

- Reviewers will need to carefully confirm that legacy specifications are not broken.

- Editor's notes and marks will indicate key changes (prior to SA ballot).

2. replace PALMA with enhanced MAAP

a) use AVTPDU Ethertype per 1722

b) format PDU as 1722 AVTPDU

- AVTPDU common header/common control header

c) maap_version=2

- add features to pre-existing message_types
  - heard by new legacy devices
    - Per 1722, a PDU with maap_version=2 and a recognized message_type is interpreted as maap_version=1
- new MAAP message_types
  - heard only by new devices
    - Per 1722, a PDU with maap_version=2 and an unrecognized message_type is ignored.

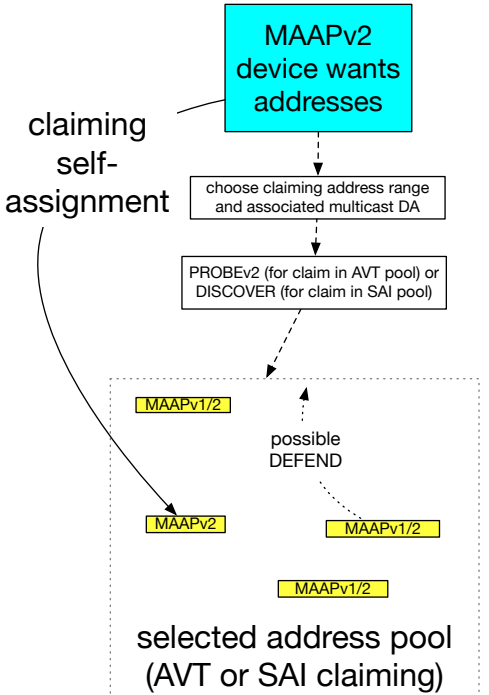
- PDU details in cq-oliva-marks-PDU

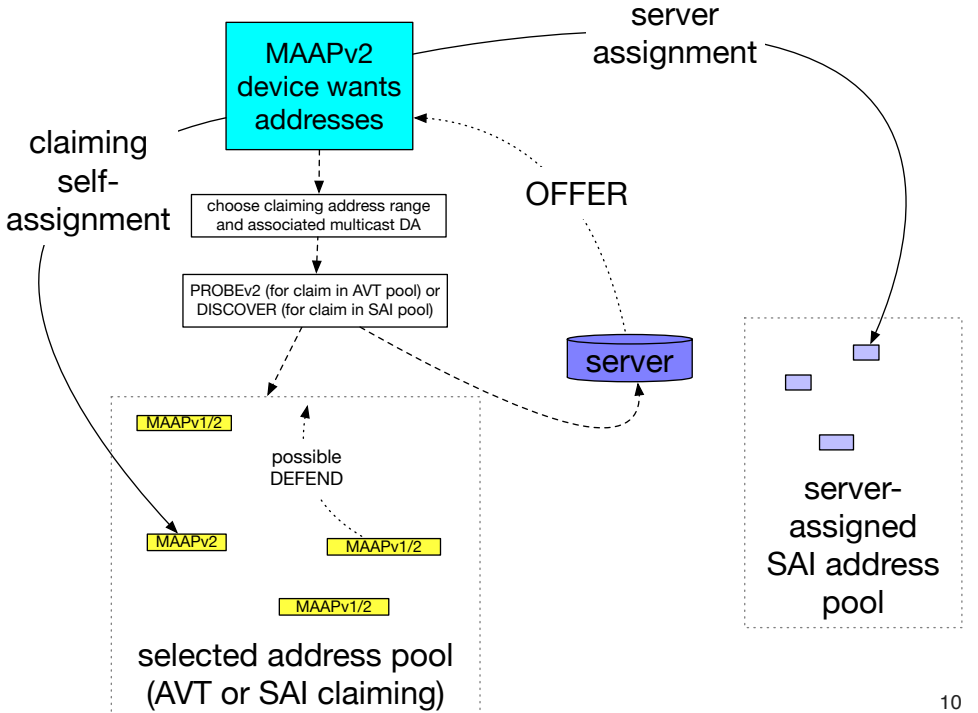
3. server responds to MAAPv2 PROBE

Discussion during 802.1 TSN comment resolution (2020-09-14) led to:

- *Introduce text to allow new server to hear and respond to upgraded MAAP message from upgraded MAAP client, such that upgraded MAAP client is enabled to respond to server assignment with newly-specified MAAP message_type, and such that pre-existing MAAP client understands upgraded MAAP message.*

- illustrations follow…


MAAPv2 device wants addresses
claiming self-assignment
choose claiming address range and associated multicast DA
PROBEv2 (for claim in AVT pool) or DISCOVER (for claim in SAI pool)
MAAPv1/2
possible DEFEND
MAAPv2
MAAPv1/2
MAAPv1/2
selected address pool (AVT or SAI claiming)


MAAPv2 device wants addresses
server assignment
claiming self-assignment
OFFER
choose claiming address range and associated multicast DA
PROBEv2 (for claim in AVT pool) or DISCOVER (for claim in SAI pool)
server
MAAPv1/2
possible DEFEND
MAAPv2
MAAPv1/2
MAAPv1/2
selected address pool (AVT or SAI claiming)
server-assigned SAI address pool

Proposed Comment Resolutions

- CID 77
  - Revise, “update draft per cq-marks-oliva-MAAP-v0”
- CIDs 27, 48, 75, 76
  - Revise, “See CID 77”
- CIDs 24
  - Revise, “See CID 77 and CID35”