(Flow Related) DLEP Extensions Update

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Update Summary

- 4 drafts accepted as WG documents
  - 2017-02-09 draft-ietf-manet-dlep-latency-extension-00
  - 2017-02-09 draft-ietf-manet-dlep-multi-hop-extension-00
  - 2017-02-09 draft-ietf-manet-dlep-pause-extension-00
  - 2017-03-13 draft-ietf-manet-dlep-da-credit-extension-01
- MIT-LL DLEP code published on github
  - DLEP stack code: https://github.com/mit-ll/LL-DLEP
  - Wireshark Dissector Plugin: https://github.com/mit-ll/dlep-wireshark-dissector
- The rest of this presentation will focus on open issues and next steps

Latency & Multi-Hop

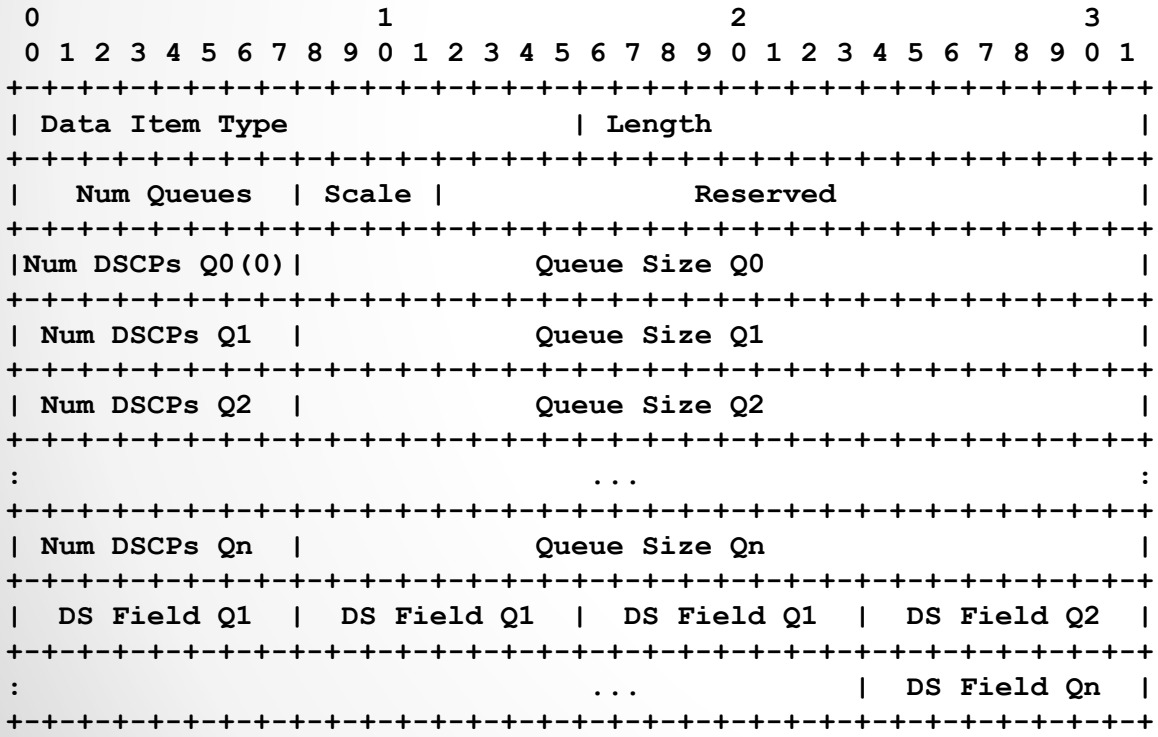
Draft	Open Issues	Next Steps
• **DLEP Latency Range Extension** o draft-ietf-manet-dlep-latency-extension-00 o reports latency that may be experienced on a link • **DLEP Multi-Hop Forwarding Extension** o draft-ietf-manet-dlep-multi-hop-extension-00 o reporting and control of multi-hop forwarding	• None known	• WG review and comments • Implementation? • LC?

Control Plane Based Pause Extension

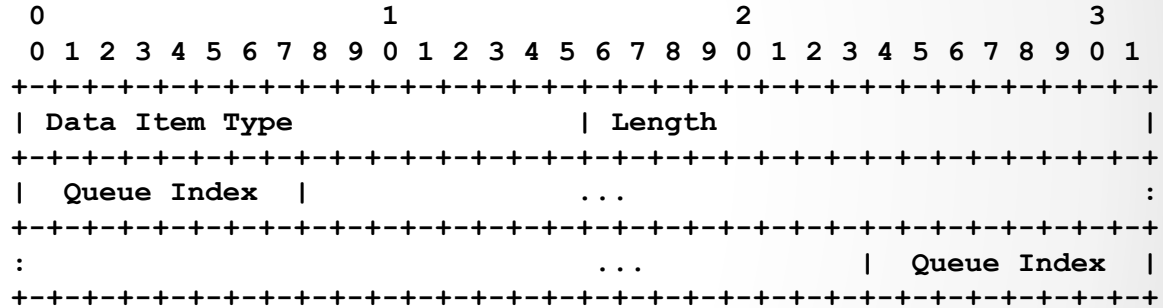
- draft-ietf-manet-dlep-pause-extension-00
- A simple ***control plane*** based flow control mechanism
  - Modem can send DLEP messages to *pause* and *restart* traffic
  - Useful when a simple control plane “xon/xoff” capability is good enough
  - May be DSCP specific
- Open issue
  - Encoding
    - Details on next slide
  - Proposal from last meeting: DLEP Data Item *Containers**
    - Supporting lists and optional information elements
    - Some discussion on the topic, with agreement on direction among potential authors
      - But no draft published
- Next steps
  - Wait for DLEP Containers?

Pause Extension Open Issue

- 1 new Extension Type
  - *Control Plane Pause*
- 3 new Data Item Values
  - Queue Parameters



Pause / Restart



Queue Size is Informational

Open issue:

- Encoding of {Queue, DSCP list} seems "complex"
- Should we wait for DLEP containers?

DiffServ Aware Credit Windowing Extension

- draft-ietf-manet-dlep-da-credit-extension-01

- A **DiffServ** aware credit-windowing scheme
  - More sophisticated flow control, for a wide range of applications
  - Flow control in one direction router → modem
- 00 → 01
  - Clarified data *cannot* be sent when credit window is empty
  - Added Appendix A: Open and Resolved Issues
    - https://tools.ietf.org/html/draft-ietf-manet-dlep-da-credit-extension-01#appendix-A
- Issues – Mainly reported by Stan
  - 5 Open, covered in subsequent slides
  - 1 Resolved

    A.6: Adding bidirectional flow control
    - Agreement on list that not needed now, and can be added when needed as own extension

Reminder: Credit Windowing Mechanisms

- 1 new Extension Type – *DiffServ Aware Credit Windowing*
- 2 new Messages
  - Credit Control and Credit Control Response
  - Modem → Router – credit increment
  - Router → Modem – status response, credit request
- 4 new Data Items
  - Queue parameters – Same as pause*
  - DA Credit Grant
    - Sets credit windows in Destination Up/Update/Announce Response messages
    - Increments windows in Credit Control messages
  - DA Credit Window Status
  - DA Credit Request

Issue A.1. Merge with draft-ietf-manet-credit-window

- There has been discussion and general agreement that dlep-da-credit-extension and credit-window should be merged
- The question is when
  - The authors propose to reach closure on core technical issues before merging

Issue A.2. Credit Windows Shared Across Destinations

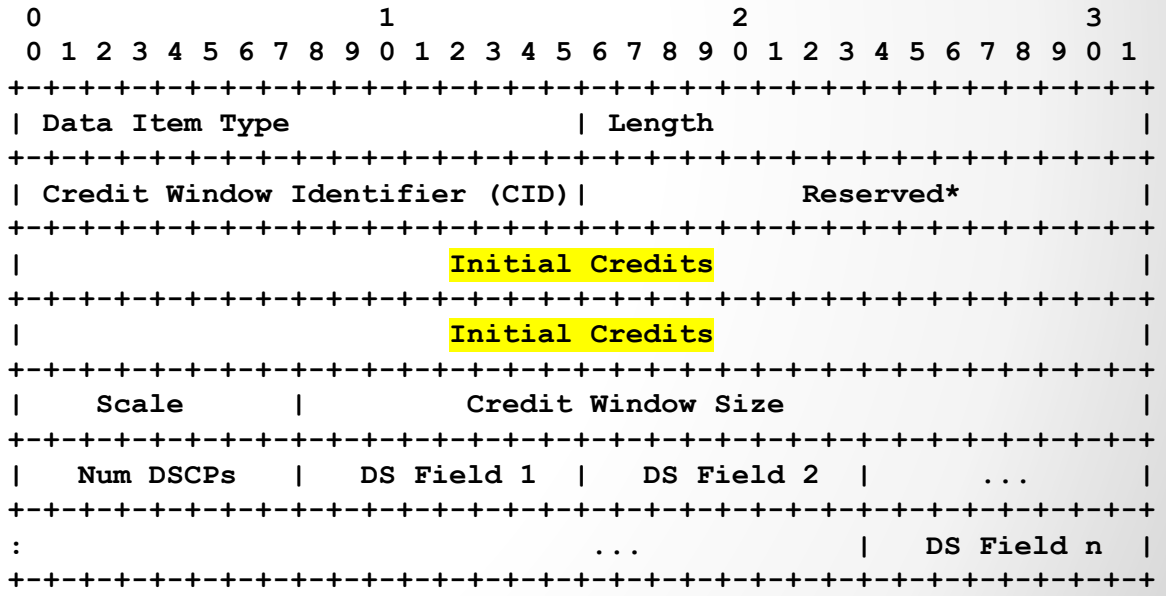
- Current draft has credit windows per MAC address (destination)
- Some media technologies share queues across a set of destinations or even all destinations – this is not supported
  - Think multi-channel radio (or multiple lambdas/ITU-T media channels)
  - Clearly missing

* -- Typically

Issue A.2. Shared Credit Windows (cont.)

- Proposed solution
  - Replace current queue definition with a per credit window data item
    - With a credit window identifier (CID)
  - CIDs can be shared or per MAC destination
    - Shared CIDs defined* in Session Initialization Response and Session Update messages
    - Per MAC CIDs defined* in Destination Up, Announce Response and Update messages
  - MAC associated CIDs are provided in Destination Up, Announce Response and Update messages
  - Credit increments basically unchanged
    - Need to decided if reset is same or different data item

Credit Window Data Item



Initial credit window may be provided

* -- Typically

Issue A.3. Supporting Router Limits

- Routers may have limits, and there is no way for such to be reported to modems
  1. Routers may support fewer credit windows than a modem
  2. Routers may not support per destination credit windows, i.e., only support DSCP based credit windows
- Other error cases are possible too
  3. The CIDs associated with a MAC destination may have duplicate DSCPs
- Some options for discussion
  - For {1, 2} – router provides capabilities during session establishment
  - For 3 – Error in Credit Control message, or just log
  - <other options from session?>

Issue A.4. Absolute vs Increment

- Proposal: replace credit window increments with absolute sets
  - Sets currently using for initialization and resyncronization
  - Proposed by Stan Ratliff <ratliffstan@gmail.com>

- Next steps
  - Is anyone interested in experimenting with this?
  - Other thoughts?

Issue A.5. Alternate Format Encoding

- Proposal to use Data Item Containers to simplify encoding of the Queue Parameters Data Item

- Queue Data Item is being replaced with Credit Window Data Item
  - With this change this issue will only apply to the Pause Extension draft

Next Steps

- Move forward as discussed today
  - draft-ietf-manet-dlep-latency-extension
  - draft-ietf-manet-dlep-multi-hop-extension

- Update drafts as discussed today
  - draft-ietf-manet-dlep-pause-extension
  - draft-ietf-manet-dlep-da-credit-extension