DLEP Extensions Update

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Post LC Drafts

• DLEP Latency Range Extension
  o draft-ietf-manet-dlep-latency-extension-03

• DLEP Link Identifier Extension
  o draft-ietf-manet-dlep-lid-extension-02

• DLEP Multi-Hop Forwarding Extension
  o draft-ietf-manet-dlep-multi-hop-extension-05

• DLEP Control Plane Based Pause Extension
  o draft-ietf-manet-dlep-pause-extension-04
LC Change: Pause

- Sub Data Items are now **unordered**
  - Parallels Data Items
  - Change based on implementation experience

The format of the Queue Parameter Sub Data Item is:

```
+---------------------------------+----------------------------------+
| Must-be-one Sub Data Item Type   | Length                           |
| Value...                        |                                 |
+---------------------------------+----------------------------------+
```

and Value has the format:

```
+---------------------------------+---------------------------------+---------------------------------+---------------------------------+
| Num DSCPs Qn   Queue Index      | Queue Size Qn   DS Field Qn     | ...                             | DS Field Qn                     |
| ...             ...               | ...               ...           | ...                             | ...                            |
```

- Also clarified that sub data item types are scoped per data item
  - This is just a clarification, not a technical change
Credit Based Flow Control
DLEP Extensions Update

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Based on Last Meeting

• DLEP DiffServ Aware Credit Window Extension refactored
  ◦ Non technical changes
  ◦ IETF 101 version  – draft-ietf-manet-dlep-da-credit-extension-04

• Moved to common document  – draft-ietf-manet-dlep-credit-flow-control-02
  ◦ Traffic Classification Data Item
    • DiffServ Traffic Classification Sub Data Item
    • Ethernet Traffic Classification Sub Data Item
  ◦ Credit Window Control
    • Messages: Credit Control, Credit Control Response
    • Credit Window Data Items: Initialization, Associate, Grant, Status, Request

• In separate documents
  • Using common credit window control and traffic classification data item
    ◦ DiffServ Aware Credit Window Extension  – draft-ietf-manet-dlep-da-credit-extension-05
    ◦ IEEE 802.1Q Aware Credit Window Extension  – draft-berger-manet-dlep-ether-credit-extension-00
Technical Changes

• Ethernet Traffic Classification Sub Data Item
  o Fixed typos and variable length definition
  o Including 4 bit pad

• Clarified sub data item value scope the data item
  o Impacted IANA section
    • DLEP Traffic Classification Sub Data Item Registry

• Requested IANA Extension Types
  o TBA: DiffServ Aware Credit Window
  o TBA: IEEE 802.1Q Aware Credit Window
Next Steps

• Confirm current split
  o Any comments?

• Adopt IEEE 802.1Q Aware Credit Window Extension draft
  • draft-berger-manet-dlep-ether-credit-extension-00
  o Which working group?
  o Any support/objections?

• More feedback
  o Based on review / implementation

• Timing of LC?

• If interested in RFC8175 …
  o 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
Control Plane Based Flow Control

**draft-ietf-manet-dlep-pause-extension**
- A simple flow control mechanism
  - Useful when a simple control plane “xon/xoff” capability is good enough
- Modem can send DLEP messages to pause and restart traffic
- May be device wide or per destination
  - To match different link technologies
  - May be DSCP specific
  - For modems with multiple queues
  - Somewhat equivalent to Ethernet PFC, but without C-Tags (VLANs) and flow control is per destination

**draft-ietf-manet-dlep-da-credit-extension**
- Credit-window flow control
  - More sophisticated flow control, for a wide range of applications
- Modem send initial size and credit grants, routers only send traffic when have credits
- Credit Windows are device wide
  - May be shared across destinations or per destination to match different link technologies
  - Each window maps to a modem logical transmit queue
  - May be DSCP specific
(Per CW) Credit Window Initialization Data Item is:

```
+---------------------------------------------+
| Data Item Type | Length (16) |
+---------------------------------------------+
| Flow Identifier (FID) | Reserved |
+---------------------------------------------+
| Credit Value |              |
+---------------------------------------------+
| Scale | Credit Window Size |
+---------------------------------------------+
```

Traffic Classification Data Item

```
+---------------------------------------------+
| Data Item Type | Length |
+---------------------------------------------+
| Traffic Class. Identifier (TID) | Num SDIs | Reserved |
+---------------------------------------------+
| Traffic Classification Sub Data Item 1 |              |
+---------------------------------------------+
| Traffic Classification Sub Data Item n |              |
+---------------------------------------------+
```

DiffServ Credit Window Traffic Classification Sub Data Item

```
+---------------------------------------------+
| Must be two (2) | Length |
+---------------------------------------------+
| Flow Identifier (FID) | Num DSCPs | DS Field 1 |
+---------------------------------------------+
| | | DS Field 2 |
+---------------------------------------------+
| | | ... |
+---------------------------------------------+
| | | DS Field n |
+---------------------------------------------+
```

Ethernet Credit Window Traffic Classification Sub Data Item is:

```
+---------------------------------------------+
| TBD | Length (8) |
+---------------------------------------------+
| Flow Identifier (FID) | NumPCPs | VLAN Identifier (VID) |
+---------------------------------------------+
| Pri. 1 | Pri. 2 | Pad |
+---------------------------------------------+
```

Credit Window Associate Data Item is:

```
+---------------------------------------------+
| Data Item Type | Length (2) |
+---------------------------------------------+
| Traffic Class. Identifier (TID) |              |
+---------------------------------------------+
```

Simplified DLEP messaging

[Diagram showing message flow between MAC Endpoint and devices]