

Flow Related DLEP Extensions Update

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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

Key Discussion at Last Meeting

- Separate flow control mechanism from traffic flow identification
 - Flow control mechanisms \Rightarrow Pause and Credit Window
 - One per current draft
 - Traffic flow identification \Rightarrow MAC Endpoint + n *DSCPs ($n \geq 0$)
 - Both drafts support traffic classification based on MAC Endpoints and DSCPs
 - Classification based on MAC Endpoints and Ethernet priority (PCP) discussed as an alternate
- Use common *data item* (TLV) formats to communicate traffic flow information
 - Including Rick's common *sub data item* (sub-TLV) format

Post IETF 100 Conclusions

Based on analysis and updates of documents:

- Sub-Data Item continues to be a useful encoding tool for both drafts
 - Formal definition is in da-credit
- Using a common traffic definition across flow control types – possible, but value is unclear
 - Adds to the complexity to pause extension implementation and processing with little gain \equiv recommend no change
- Separation of credit window definition from traffic description is viable
 - Reflected in draft-ietf-manet-dlep-da-credit-extension-04
 - Validated by adding notional Ethernet Credit Window Traffic Classification

Open Question: How Many Documents?

- da-credit contains multiple parts that could be separated
 1. Sub-Data Item format and IANA registry
 2. Credit window flow control
 3. Generic traffic classification data item
 4. DiffServ Credit Window Traffic Classification Sub Data Item
 5. Notional Ethernet Credit Window Traffic Classification Sub Data Item
- How many documents?
 - All needed by da-credit
 - #1 used by pause
 - There is no issue for one document to reference another for a data item definition
- Recommendation 4 documents:
 - I. DLEP Sub-Data Items (1)
 - II. Credit Window Control (2+3)
 - III. DiffServ Credit Window Extension (4) – uses I and II
 - IV. Ethernet Credit Window Extension (5) – uses I and II

Background: Current Operation

[draft-ietf-manet-dlep-da-credit-extension](#)

(Per CW) Credit Window Initialization Data Item is:

```

+-----+-----+
| Data Item Type          | Length (16)          |
+-----+-----+
| Flow Control Identifier (FCID)| Reserved             |
+-----+-----+
|                          | Credit Value         |
|                          |                      |
|                          | 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 |
+-----+-----+-----+-----+

```

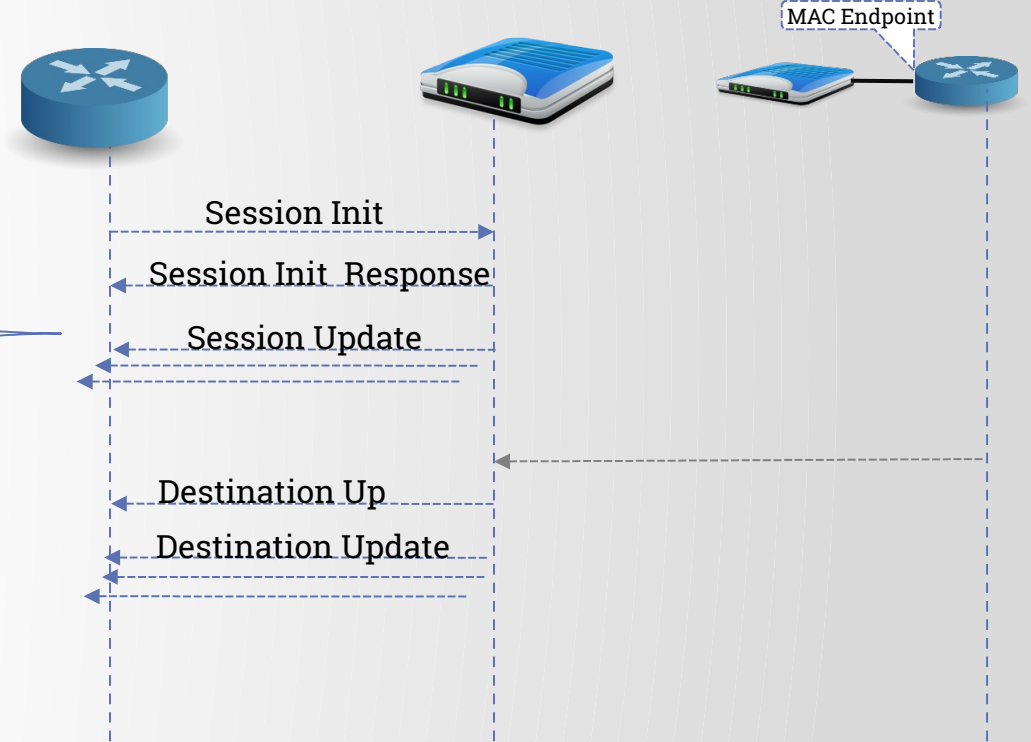
DiffServ Credit Window Traffic Classification Sub Data Item

```

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

```

Simplified DLEP messaging



Destination messages

Background: Current Operation

[draft-ietf-manet-dlep-pause-extension](#)

(one) Queue Parameters Data Item:

```

+++++
| Data Item Type          | Length          |
+++++
| Num Queues  | Scale |          Reserved          |
+++++
| Reserved    |          Queue Size Q0    |
+++++
|          Queue Parameter Sub Data Item 1          |
+++++
:
:
:
|          Queue Parameter Sub Data Item n          |
+++++

```

Queue Parameter Sub Data Item

```

+++++
| Num DSCPs Qn  |          Queue Size Qn          |
+++++
| DS Field Qn  | DS Field Qn  |          ...          |
+++++
:
:
:
|          DS Field Qn  |
+++++

```

Session Update Message = link pause

Destination Update Message = destination specific pause

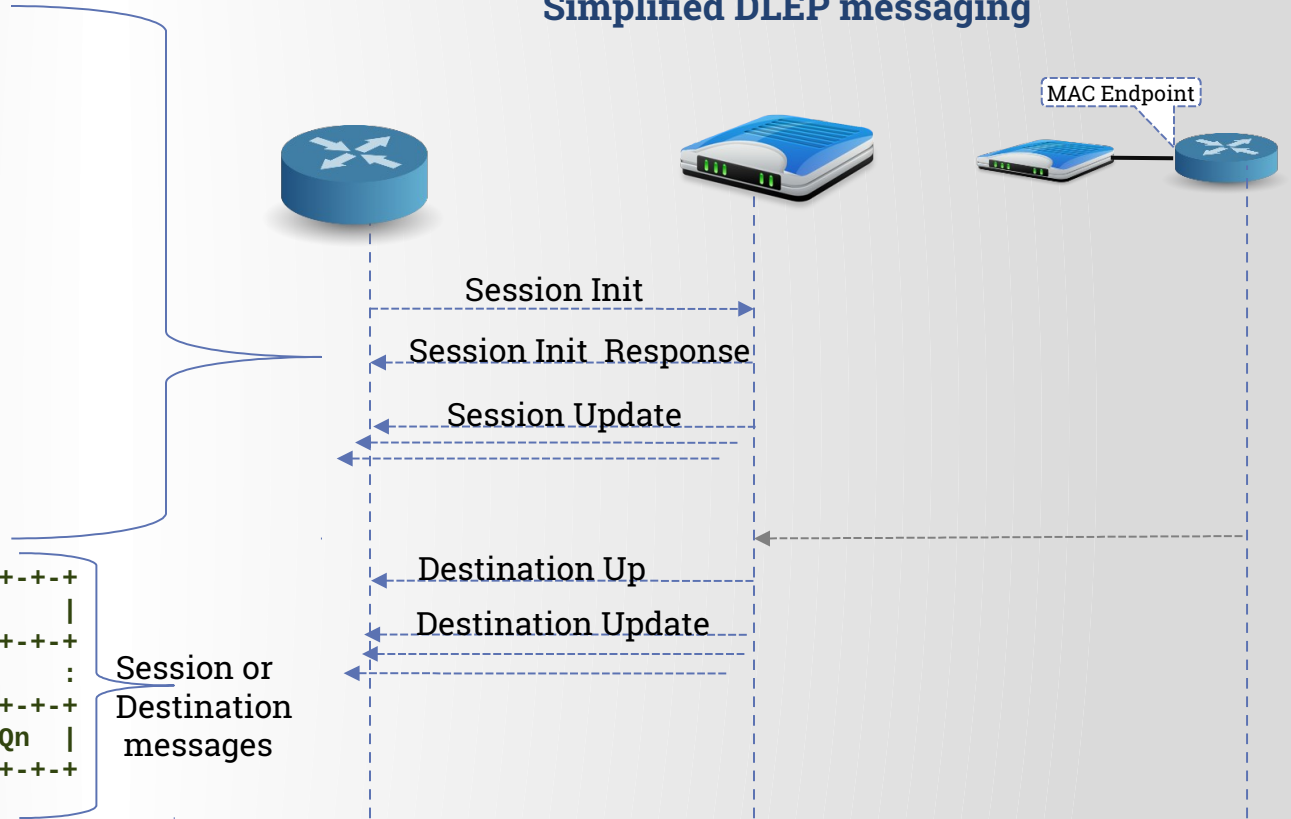
Pause and Restart Data Item

```

+++++
| Data Item Type          | Length          |
+++++
| Queue Index  |          ...          |
+++++
:
:
:
|          Queue Index  |
+++++

```

Simplified DLEP messaging



Session or Destination messages

Background: Discarded Pause Option

[draft-ietf-manet-dlep-pause-extension](#)

(one per queue) Queue Parameters Data Item:

```

+-----+-----+
| Data Item Type           | Length (16) |
+-----+-----+
| Flow Control Identifier (FCID)|           Reserved |
+-----+-----+
|   Scale   |           Queue Size Q0 |
+-----+-----+
    
```

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

```

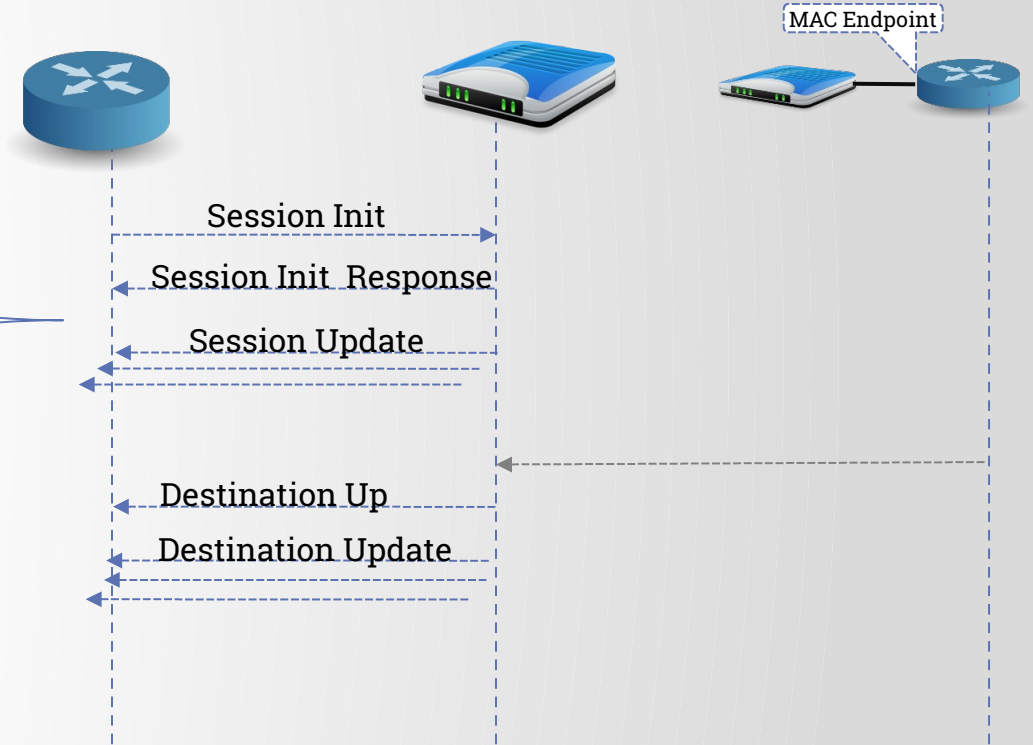
+-----+-----+
| Must be two (2)         | Length |
+-----+-----+
| Flow Control Identifier (FCID)| Num DSCPs |           DS Field 1 |
+-----+-----+
|           DS Field 2 |           ... |           DS Field n |
+-----+-----+
    
```

Ethernet Credit Window Traffic Classification Sub Data Item is:

```

+-----+-----+
| TBD                       | Length (8) |
+-----+-----+
| Flow Control Identifier (FCID)| NumPCPs| VLAN Identifier (VID) |
+-----+-----+
    
```

Simplified DLEP messaging



Session or Destination messages

Next Steps

- Confirm current approach
 - Split/Update as discussed
 - LC before IETF 102?
-
- If interested in RFC8175 ...
 - 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>