

PCEP Extension for DetNet Bounded Latency

draft-xiong-pce-detnet-bounded-latency-05

Quan Xiong(ZTE)
Peng Liu(China Mobile)
Rakesh Gandhi(Cisco)

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Updates from last versions

- Presented at IETF#114 , #116 and #119 and comments at meetings and on the mailing list are appreciated from :
 - Dhruv Dhody/Andrew Stone/Lou Berger/Janos Farkas
- Updates from version -00
 - **Align with the dataplane solutions as per [draft-ietf-detnet-dataplane-taxonomy];**
 - **Add “Operations” section to clarify the path computation and PCEP procedures;**
 - **Add “Security Considerations” section;**
 - Align with the DetNet enhancement requirements in [draft-ietf-detnet-scaling-requirements] section 4.2 and the terminology such as Deterministic Latency Information;
 - Align with the DetNet control plane in [draft-ietf-detnet-controller-plane-framework], the path information should be distributed;
 - Clarification for PCE to get bounded latency capabilities by underlying IGP extensions including IS-IS and OSPF;
 - Change the extensions from Deterministic Path Object to Deterministic Path ERO Subobject as suggested.

PCEP Extensions

- METRIC Object
 - End-to-End Bounded Latency Metric
 - This document proposes the End-to-End Bound Latency metric to request a deterministic path meeting the end-to-end latency requirement.
 - End-to-End Bounded Jitter Metric
 - This document proposes the End-to-end Bounded Jitter metric to request a deterministic path meeting the end-to-end jitter requirement.

- LSP-EXTENDED-FLAG TLV in LSP Object defined in RFC9357

- Deterministic Path ERO Subobject

- * T=TBD1: End-to-End Bounded Latency Metric.
- * The value of End-to-End Bounded Latency Metric is the encoding in units of microseconds with 32 bits.
- * The B bit MUST be set to suggest a maximum bound for the end-to-end latency of deterministic path. The end-to-end latency must be less than or equal to the value.
- * T=TBD2: End-to-End Bounded Jitter Metric.
- * The value of End-to-End Bounded Jitter Metric is the encoding in units of microseconds with 32 bits.
- * The B bit MUST be set to suggest a maximum bound for the end-to-end jitter of deterministic path. The end-to-end jitter must be less than or equal to the value.

D (Request for Deterministic Path) : If the bit is set to 1, it indicates that the PCC requests PCE to compute the deterministic path. A PCE would also set this bit to 1 to indicate that the deterministic path is included by PCE and encoded in the PCRep, PCUpd or PCInitiate message.

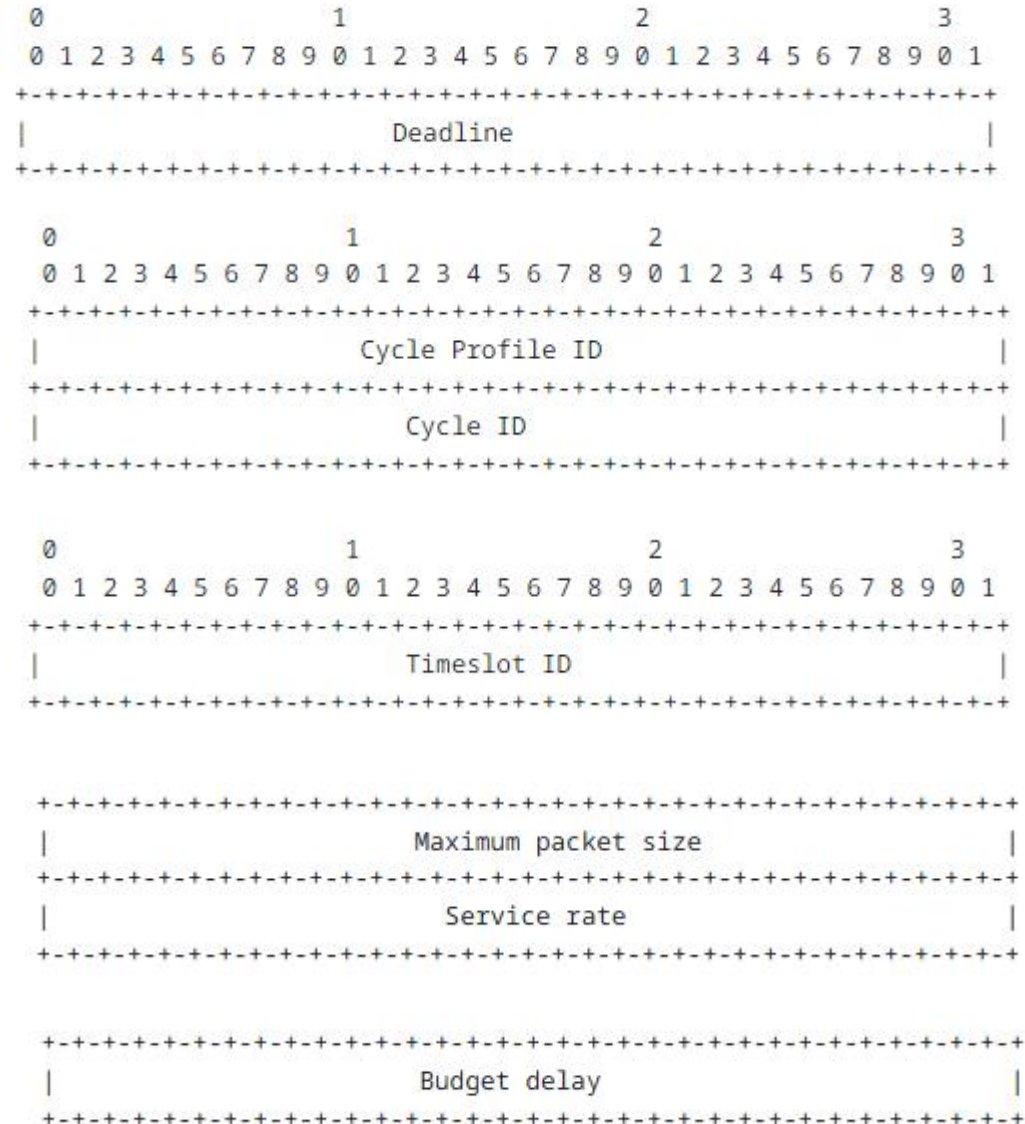
```

0           1           2           3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 |
+-----+-----+-----+-----+-----+-----+-----+-----+
|L| Type=TBD3 |   Length   |   Class   |  DLI Type |
+-----+-----+-----+-----+-----+-----+
// Deterministic Latency Information(variable, optional) //
+-----+-----+-----+-----+-----+-----+

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PCEP Extensions (cont)

- **Deadline Information**
 - it is optional and indicates the deadline for a node to forward a flow.
- **Cycle Information**
 - it is optional and indicates the profile and/or the cycle number for a node to forward a flow.
- **Timeslot Information**
 - it is optional and indicates the timeslot number for a node to forward a flow.
- **Ratio Information**
 - it is optional and indicates the packet rate or size for a node to forward a flow.
- **Damper Information**
 - it is optional and indicates the budget delay which the PCE calculated for this deterministic path.



Next Steps

- Comments and suggestions are very welcome!
- Ask adoption!Thanks!