

# PCEP Extension for Distribution of Link-State and TE information for Optical Networks

draft-lee-pce-pcep-ls-optical-14

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# Introduction

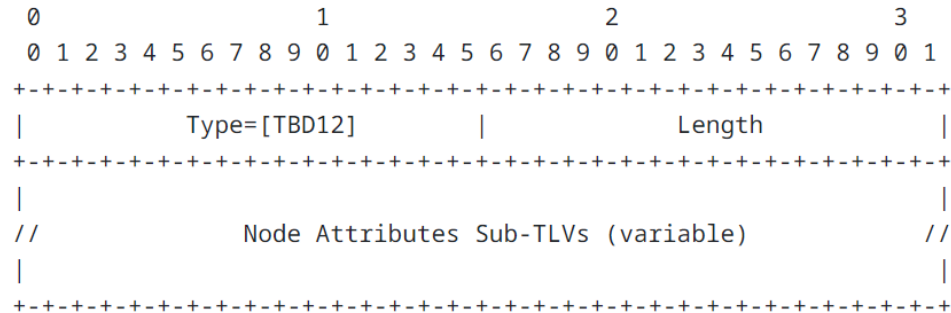
- PCEP-LS describes a generic mechanism by which Link State and TE information can be collected from packet networks and shared with a PCE with PCEP. This is achieved using a new PCEP message format.
- Generic Link state work (draft-ietf-pce-pcep-ls) was adopted earlier this year.
- This document provides extensions to the link state for OTN networks.
  - Given the development of recent OTN technology (e.g., fine-grain OTN), this approach is becoming more valuable
  - The desire for PCEP-LS in optical networks may be stronger because BGP is not usually implemented, so we don't have an option with BGP-LS
- Document Status:
  - Moved together with draft-ietf-pce-pcep-ls, but not presented in recent years
  - Restarted after the adoption of draft-ietf-pce-pcep-ls, to cover the PCEP-LS applications in OTN

# Applicability cases

- Case 1: There is an IGP running in the optical network, but there is a need to collect LS and TE resource information at a PCE from individual or specific optical nodes more frequently or more rapidly than the IGP allows.
  - Using PCEP-LS, a PCE may receive full information or an incremental update (as opposed to the entire TE information of the node/link).
- Case 2: There is no IGP running in the optical network and there is a need to collect link-state and TE resource information from the optical nodes for use by the PCE.
- Case 3: There is a need to share abstract optical link-state and TE information from a child PCE to a parent PCE in a hierarchical PCE (H-PCE) system per [\[RFC6805\]](#) and [\[RFC8751\]](#). Alternatively, this requirement may exist between a Provisioning Network Controller (PNC) and a Multi-Domain Service Coordinator (MDSC) in the Abstraction and Control of TE Networks (ACTN) architecture [\[RFC8453\]](#).

# PCEP extensions – Node Attributes

Node Attributes – extending from section 9.2.10.1 in PCEP-LS

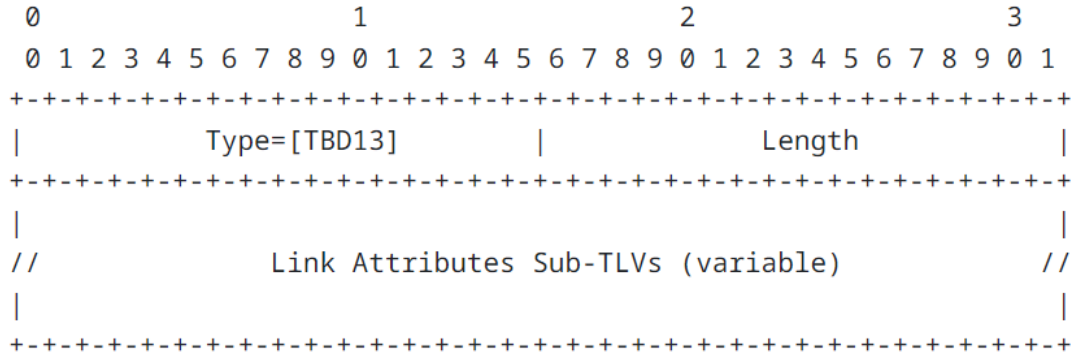


Following optical-specific attributes are extended in this document:

| PCEP-LS Sub-tlv | Meaning   | Reference |
|-----------------|---|-----------|
| TBD1            | Connectivity Matrix                               | RFC7579   |
| TBD2            | Resource Block Information                        | RFC7688   |
| TBD3            | Resource Block Accessibility                      | RFC7688   |
| TBD4            | Resource Block Wavelength Constraint              | RFC7688   |
| TBD5            | Resource Block Pool State                         | RFC7688   |
| TBD6            | Resource Block Shared Access Wavelength Available | RFC7688   |

# PCEP extensions – Link Attributes

Link Attributes – extending from section 9.3.9.2 in PCEP-LS



Following optical-specific attributes are extended in this document:

| PCEP-LS Sub-tlv | Meaning                | Reference                 |
|-----------------|------------------------|---------------------------|
| TBD7            | ISCD                   | RFC4203                   |
| TBD8            | OTN-TDM SCSI           | RFC4203, RFC7138          |
| TBD9            | WSON-LSC SCSI          | RFC4203, RFC7688          |
| TBD10           | Flexi-grid SCSI        | RFC8363                   |
| TBD11           | Port Label Restriction | RFC7579, RFC7580, RFC7688 |

# Next Step

- Continue working to cover all OTN technologies:
  - Now missing: fine-grain OTN (ITU-T G.709.20) which has specific demand on the link state mechanism
  - Implementation under progressing
- Call for WG adoption
- Cross-review by CCAMP to check the technology details
- Contribution & Comments are welcome

## Thank you!