Yang Model for PCEP

draft-pkd-pce-pcep-yang-05

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Introduction

A YANG data model for the management of PCEP

- Includes configuration data and operational state

Base PCEP specification as per RFC 5440 and some extensions

- Stateful PCE

Recent Changes

Last presented in Prague (-03 version); updated based on feedback -

Description for LSP-DB	Timestamp for session creation	All stats under a container "pcep-stats"	Removed "entity-addr" from all notification

Thanks Oscar!

Stateful PCE's LSP-DB

```
module: ietf-te
    +--rw te!
        +--ro lsps-state
        |   +--ro lsp*
        [source destination tunnel-id lsp-id extended-tunnel-id type]
        |           +--ro source                     inet:ip-address
        |           +--ro destination                inet:ip-address
        |           +--ro tunnel-id                  uint16
        |           +--ro lsp-id                     uint16
        |           +--ro extended-tunnel-id         inet:ip-address
        |           +--ro type                       identityref
        |           +--ro oper-status?               identityref
        |           +--ro origin-type?               enumeration
        |           +--ro lsp-resource-status?       enumeration
        |           +--ro lsp-protection-role?       enumeration
        |           +--ro lsp-operational-status?    empty
        |           +--ro lsp-record-route
        |           |   +--ro record-route-subobjects* [subobject-index]
        |           |       +--ro subobject-index       uint32
        |           |       +--ro (type)?
        |           |           +--:(ipv4-address)
        |           |           |   +--ro v4-address?        inet:ipv4-address
        |           |           |   +--ro v4-prefix-length?  uint8
        |           |           |   +--ro v4-flags?          uint8
        |           |           +--:(ipv6-address)
        |           |           |   +--ro v6-address?        inet:ipv6-address
        |           |           |   +--ro v6-prefix-length?  uint8
        |           |           |   +--ro v6-flags?          uint8
        |           |           +--:(label)
        |           |               +--ro value?             uint32
        |           |               +--ro flags?             uint8
        |           +--ro te-dev:lsp-timers
        |           |   +--ro te-dev:life-time?        uint32
        |           |   +--ro te-dev:time-to-install?  uint32
        |           |   +--ro te-dev:time-to-die?      uint32
        |           +--ro te-dev:downstream-info
        |           |   +--ro te-dev:nhop?                 inet:ip-address
        |           |   +--ro te-dev:outgoing-interface?  if:interface-ref
        |           |   +--ro te-dev:neighbor?             inet:ip-address
        |           |   +--ro te-dev:label?               uint32
        |           +--ro te-dev:upstream-info
        |               +--ro te-dev:phop?      inet:ip-address
        |               +--ro te-dev:neighbor?  inet:ip-address
        |               +--ro te-dev:label?     uint32
```

```
+--ro lsp-db {stateful}?
|   +--ro lsp* [plsp-id pcc-id]
|       +--ro plsp-id                  uint32
|       +--ro pcc-id                   inet:ip-address
|       +--ro admin-state?             boolean
|       +--ro operational-state?       operational-state
|       +--ro delegated
|       |   +--ro enabled?    boolean
|       |   +--ro pce?        leafref
|       |   +--ro srp-id?     uint32
|       +--ro symbolic-path-name?     string
|       +--ro last-error?             lsp-error
```

o LSP-DB in PCEP yang with PCEP specific attributes

o Generic LSP state in ietf-te

o Device specific LSP state in ietf-te-device

o add leafref in PCEP yang to ietf-te lsp state

Stateful PCE's LSP-DB - proposed

```
+--ro lsp-db {stateful}?
|   +--ro lsp* [plsp-id pcc-id]
|      +--ro plsp-id                    uint32
|      +--ro pcc-id                     inet:ip-address
|      +--ro lsp-ref
|      |  +--ro source?                 leafref
|      |  +--ro destination?            leafref
|      |  +--ro tunnel-id?              leafref
|      |  +--ro lsp-id?                 leafref
|      |  +--ro extended-tunnel-id?     leafref
|      |  +--ro type?                   leafref
|      +--ro admin-state?               boolean
|      +--ro operational-state?         operational-sta
|      +--ro delegated
|      |  +--ro enabled?    boolean
|      |  +--ro pce?        leafref
|      |  +--ro srp-id?     uint32
|      +--ro symbolic-path-name?        string
|      +--ro last-error?                lsp-error
```

leafref to ietf-te

```
container lsp-ref{
    description
        "reference to ietf-te lsp state";

    leaf source {
        type leafref {
            path "/te:te/te:lsps-state/te:lsp/te:source";
        }
        description
          "Tunnel sender address extracted from
          SENDER_TEMPLATE  object";
        reference "RFC3209";
    }
    leaf destination {
        type leafref {
            path "/te:te/te:lsps-state/te:lsp/te:destination";
        }
        description
            "Tunnel endpoint address extracted from
            SESSION object";
        reference "RFC3209";
    }
}
```

Open Issue

Mark tunnels to be delegated at PCC in config model

Mark tunnels as PCE-initiated tunnel in config model

Add to ietf-te yang config model?

Yang Model Arrangement?

PCEP-Yang	TE-Yang
• Config container has 'intended-config' • State container has both 'applied-config' and 'derived state	• Follows the OpenConfig suggestion • Maintain 'intended-config' and 'applied-config' together

Is it upto each module author to decide?

Next···

PCEP Security	Segment Routing	Association
• Including TLS		

o Request to authors of various extension to help with updating yang model

o Add details in manageability considerations for Yang model for ongoing work

o Yang: https://github.com/dhruvdhody-huawei/pcep-yang/blob/master/ietf-pcep.yang

o **PCE WG Adoption call?**

Thanks!