Yang Model for PCEP

draft-pkd-pce-pcep-yang-05

Dhruv Dhody	Huawei
Jonathan Hardwick	Metaswitch
Vishnu Pavan Beeram	Juniper
Zafar Ali	Cisco
Jeff Tantsura	Ericsson

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
```

- LSP-DB in PCEP yang with PCEP specific attributes
- Generic LSP state in ietf-te
- Device specific LSP state in ietf-te-device
- add leafref in PCEP yang to ietf-te lsp state

Stateful PCE's LSP-DB - proposed

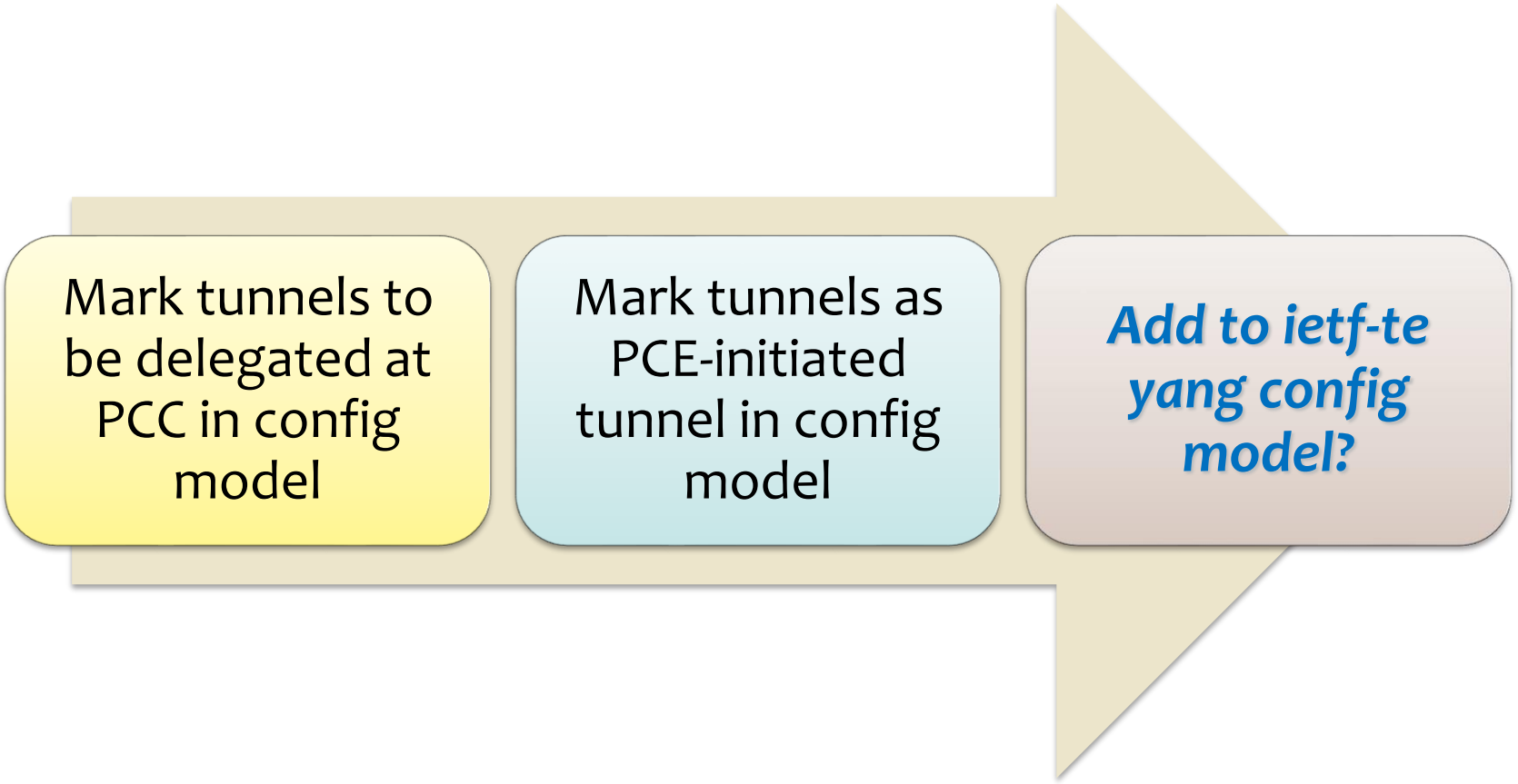
```
+--ro lsp-db {stateful}?
|  +--ro lsp* [plsp-id pcc-id]
|     +--ro plsp-id                uint32
|     +--ro pcc-id                 inet:ip-address
|     +--ro lsp-ref
|     |  +--ro source?                leafref
|     |  +--ro destination?           leafref
|     |  +--ro tunnel-id?             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		

- Request to authors of various extension to help with updating yang model
- Add details in manageability considerations for Yang model for ongoing work
- Yang: https://github.com/dhruvdhody-huawei/pcep-yang/blob/master/ietf-pcep.yang
- **PCE WG Adoption call?**

Thanks!