

BIER TE YANG

draft-zhang-bier-te-yang-07

BIER WG
IETF104# Prague

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BIER TE YANG

- According to draft-ietf-bier-te-arch
- Defines a YANG data model for BIER TE configuration and operation

BIER TE YANG

- Key features of BIER TE:
 - BIER-TE replaces in-network autonomous path calculation by explicit paths calculated offpath by the BIER-TE controller host.
 - In BIER-TE every BitPosition of the BitString of a BIER-TE packet indicates one or more adjacencies - instead of a BFER as in BIER.
 - BIER-TE in each BFR has no routing table but only a BIER-TE Forwarding Table (BIFT) indexed by SI:BitPosition and populated with only those adjacencies to which the BFR should replicate packets to.
- BIER TE forwarding table is
 - readable and writable
 - based on adjacency

BIER TE YANG

The YANG model includes:

- Adjacency BP
- Forwarding items
- Optional TE FRR forwarding items

```
module: ietf-bier-te  
augment /rt:routing:
```

```
  +--rw bier-te  
    +--rw subdomain* [subdomain-id]  
      +--rw subdomain-id  uint16  
      +--rw te-adj-id  
        .....  
    +--rw bsl* [fwd-bsl]  
      .....  
    +--rw te-frr-items {bier-te-frr}?  
      .....
```

Adjacency BP:

- The BIER-TE controller host tracks the BFR topology of the BIER-TE domain and assigns BitPositions to adjacencies.
- The TE adjacency type describes the character of link.

```
+--rw bier-te  
  +--rw subdomain* [subdomain-id]  
    +--rw subdomain-id  uint16  
    +--rw te-adj-id  
      | +--rw si* [si]  
      |   +--rw si  uint16  
      |   +--rw adj* [adj-id]  
      |     +--rw adj-id  uint16  
      |     +--rw adj-if  if:interface-ref  
      |     +--rw bp-type? enumeration
```

BIER TE YANG---detail

- Because the BitPosition is multi-semantic in different sub-domain and set identifier. The BIER TE forwarding is according to the combination of <SD, BSL, SI>
- The ECMP and FRR can be used in BIER TE forwarding.

```
+--rw te-frr-items {bier-te-frr}?  
  +--rw btaft* [frr-index]  
    +--rw frr-index  uint16  
    +--rw frr-si    uint16  
    +--rw frr-bsl   uint16  
    +--rw addbitmask* [bitmask]  
      +--rw bitmask  bit-string
```

```
module: ietf-bier-te  
augment /rt:routing:  
  +--rw bier-te  
    +--rw subdomain* [subdomain-id]  
      +--rw subdomain-id  uint16  
      .....    +--rw bsl* [fwd-bsl]  
      | +--rw fwd-bsl  uint16  
      | +--rw si* [si]  
      |   +--rw si      uint16  
      |   +--rw te-bift-id  
      |     | +--rw type?  enumeration  
      |     | +--rw value  rt-types:mpls-label  
      |     +--rw fwd-items* [te-bp]  
      |       +--rw te-bp  uint16  
      |       +--rw bp-type?  enumeration  
      |       +--rw (fwd-type)  
      |         | +--:(connected)  
      |         | +--:(routed)  
      |         | +--:(local-decap)  
      |         | +--:(other)  
      |       +--rw dnr-flag?  boolean  
      |       +--rw out-info  
      |         | +--rw fwd-intf      if:interface-ref  
      |         | +--rw te-out-bift-id  
      |         |   +--rw type?  enumeration  
      |         |   +--rw value  rt-types:mpls-label  
      |       +--rw te-frr {bier-te-frr}?  
      |         | +--rw frr-index?  uint16  
      |         | +--rw resetbitmask* [bitmask]  
      |         |   +--rw bitmask  bit-string  
      |       +--rw te-ecmp* [out-if] {bier-te-ecmp}?  
      |         +--rw out-if      if:interface-ref  
      |         +--rw te-out-bift-id  
      |         +--rw type?  enumeration  
      |         +--rw value  rt-types:mpls-label  
      +--rw te-frr-items {bier-te-frr}?
```

BIER TE YANG---notification and RPC

notifications:

```
+---n bier-te-notification
  +--ro bp-is-zero* [if-index]
    +--ro if-index  if:interface-ref
    +--ro bp-type?  enumeration
```

- It is invalid when the BP of link is set to zero.
- Other notifications may be done in future version.

The potential RPCs may be added in future version.

BIER project in ODL



- BIER TE YANG model has been implemented in ODL BIER project.
- The project has been released in Nitrogen version.
- This model is feasible and practicable.
- <https://wiki.opendaylight.org/view/BIER:Main>

- Any comment ^{^^}
- WG adoption?

Thanks!