YANG Data model for BIER

draft-chh-bier-bier-yang
Ran Chen
Fangwei Hu
Zheng Zhang
Xianxian Dai
ZTE Corporation
Mahesh Sivakumar
Cisco
Goals

• Define the BIER data model
• Help for product implementation for BIER
Changes from -00 to -01

• Add Mahesh Sivakumar as co-author.
• BFR-ID configuration:
  – Add default BFR-ID in bier-global.
• Import ietf-mpls model and change the type of bier-label from uint 32 to mpls-label.
• Redefine the operational state of BIRT.
Changes from -00 to -01

- BitStringLength configuration:
  - Define two types of bitstringLengths (imposition and disposition) instead of one just for more flexibility.
Typedef

Typedef the BIER basic parameters.

```c
/* Type definitions */
typedef sub-domain-id {
    type uint16;
    description "The type for sub-domain-id";
}

typedef si {
    type uint16;
    description "The type for set identifier";
}

typedef bfr-id {
    type uint16;
    description "The type for bfr identifier";
}

typedef bsl {
    type enumeration{
        enum 64-bit{
            description "bitstringlength is 64";
        }
        enum 128-bit{
            description "bitstringlength is 128";
        }
        enum 256-bit{
            description "bitstringlength is 256";
        }
        enum 512-bit{
            description "bitstringlength is 512";
        }
        enum 1024-bit{
            description "bitstringlength is 1024";
        }
        enum 2048-bit{
            description "bitstringlength is 2048";
        }
        enum 4096-bit{
            description "bitstringlength is 4096";
        }
    }
    description "The bitstringlength type for imposition mode";
}
```
module: ietf-bier
augment /rt: routing:
  ---rw bier
  ||---rw bier-global
  ||  ||---rw encapsulation-type? identityref
  ||  ||---rw bitstringlength? bsl
  ||  ||---rw bfr-id? bfr-id
  ||  ||---rw af
  ||  |  ||---rw ipv4
  ||  |  |  ||---rw ipv4-bfr-prefix? inet:ipv4-prefix
  ||  |  ||---rw ipv6
  ||  |  |  ||---rw ipv6-bfr-prefix? inet:ipv4-prefix
  ||  ||---rw sub-domain* [sub-domain-id]
  ||  ||  ||---rw sub-domain-id sub-domain-id
  ||  ||  ||---rw mt-id? uint16
  ||  ||  ||---rw bfr-id? bfr-id
  ||  ||  ||---rw frr? boolean
  ||  ||  ||---rw bitstringlength? bsl
  ||  ||---rw af
  ||  ||  ||---rw ipv4* [bitstringlength bier-mpls-label]
  ||  ||  ||  ||---rw bitstringlength uint16
  ||  ||  ||  ||---rw bier-mpls-label mpls:mpls-label
  ||  ||  ||  ||---rw bier-mpls-label-range-size? uint8
  ||  ||  ||---rw ipv6* [bitstringlength bier-mpls-label]
  ||  ||  ||  ||---rw bitstringlength uint16
  ||  ||  ||  ||---rw bier-mpls-label mpls:mpls-label
  ||  ||  ||  ||---rw bier-mpls-label-range-size? uint8
Control Plane Configuration

• Protocol extensions:

```yang
augment /rt:routing/rt:routing-instance/rt:routing-protocols
/rt:routing-protocol/isis:isis/isis:instance:
    +---rw mt
        +---rw mt-id           uint16
        +---rw bier-global
            +---rw enable?    boolean
            +---rw advertise?  boolean
            +---rw receive?    boolean

augment /rt:routing/rt:routing-instance/rt:routing-protocols
/rt:routing-protocol/ospf:ospf/ospf:instance:
    +---rw mt
        +---rw mt-id           uint16
        +---rw bier-global
            +---rw enable?    boolean
            +---rw advertise?  boolean
            +---rw receive?    boolean
```
Operational State Structure

```
augment /rt:routing-state:
  +---ro bier-global
    |  +---ro bfr-id?  bfr-id
    |  +---ro ipv4-bfr-prefix?  inet:ipv4-prefix
    |  +---ro ipv6-bfr-prefix?  inet:ipv6-prefix
    |  +---ro sub-domain* [sub-domain-id]
    |  |  +---ro sub-domain-id  sub-domain-id
    |  |  +---ro mt-id?  uint16
    |  |  +---ro bfr-id?  bfr-id
    |  |  +---ro bitstringlength?  uint16
    |  |  +---ro ipv4* [bitstringlength label]
    |  |  |  +---ro bitstringlength  uint16
    |  |  |  +---ro label  mpls:mpls-label
    |  |  +---ro label-range-size?  uint8
    |  |  +---ro ipv6* [bitstringlength label]
    |  |  |  +---ro bitstringlength  uint16
    |  |  |  +---ro label  mpls:mpls-label
    |  |  +---ro label-range-size?  uint8
    |  +---ro birts
    |  |  +---ro birt-subdomain* [sub-domain-id]
    |  |  |  +---ro sub-domain-id  sub-domain-id
    |  |  |  +---ro birt-bitstringlength* [bitstringlength]
    |  |  |  |  +---ro bitstringlength  uint16
    |  |  |  +---ro birt-si* [si]
    |  |  |  |  +---ro si  si
    |  +---ro f-bm?  uint16
    +---ro bier-mpls-in-label?  mpls:mpls-label
    +---ro bfr-nbr?  inet:ip-address
    +---ro bier-mpls-out-label?  mpls:mpls-label
```
Notifications

```
notifications:
  +---n bfr-id-collision
  |   +---ro bfr-id?   bfr-id
  +---n bfr-zero
  |   +---ro ipv4-bfr-prefix?   inet:ipv4-prefix
  |   +---ro ipv6-bfr-prefix?   inet:ipv6-prefix
  +---n sub-domain-id-collision
      |   +---ro sub-domain-id?   sub-domain-id
      |   +---ro mt-id?           uint16
```
Next Step

• Comments welcome.
• Ask for WG adoption.
Thanks!