

YANG Data Model for FlexE Interface Management

draft-jiang-ccamp-flex-e-yang-01

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Requirements on FlexE Interface Mgmt

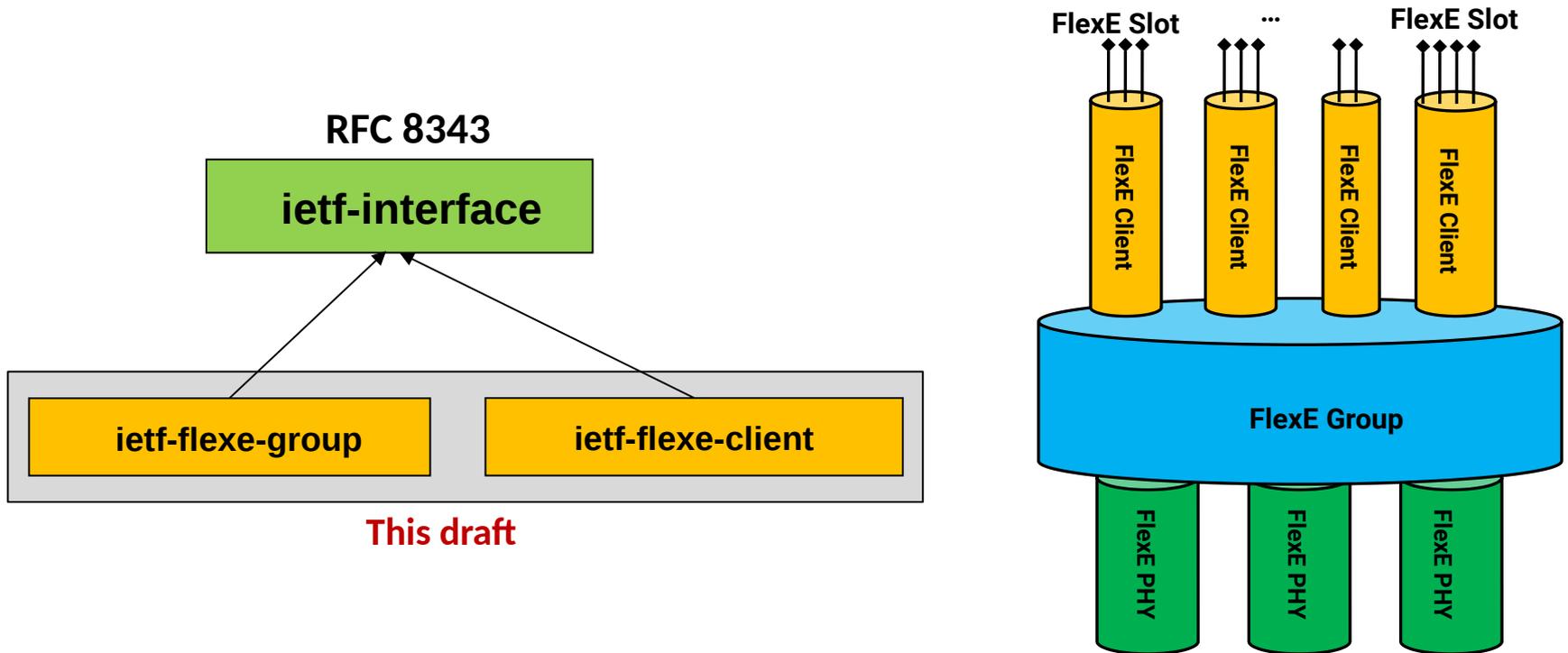
- Configuration of FlexE Group as a network interface, binding of multiple FlexE PHYs, configuration of FlexE Clients and mapped slots in a FlexE Group
- FlexE status retrieval including FlexE Group, FlexE PHYs and FlexE clients
- Support of interface management in applications for both SDN and distributed routing
- Support of FlexE 2.0, but backwards compatible with FlexE 1.0

What is an interface

Based on the IFMIB & ietf-interfaces.yang, an interface is defined as a generic container with the following characteristics:

- It identifies a stream of network traffic (potentially at any layer)
- It is an anchor point to apply features and protocol forwarding configuration on that stream of traffic
- It has an interface type (IANA defines many different flavours, such as fastEther, see RFC 7224)
- Its status such as statistics can be monitored

Hierarchy of interfaces in FlexE



- ✓ Both FlexE Group and FlexE Client can be managed as a network interface, and both are augmented from ietf-interface
- ✓ A FlexE Client is actually contained in a FlexE Group, and can be configured with or resized to some FlexE slots

YANG Tree Diagrams in the draft

module: ietf-flexe

augment /if:interfaces/if:interface:

```
+--rw flexe-group
  +--rw group-number?      uint32
  +--rw slot-granularity?  slot-granularity-enumeration
  +--rw flexe-phy-type?    flexe-phy-enumeration
  +--rw flexe-phy-list* [phy-number]
    | +--rw phy-number      uint8
    | +--rw flexe-phy-if?   if:interface-ref
    | +--ro phy-status?     uint8
    | +--rw calendar-slot-list* [slot-id]
    |   +--rw slot-id       uint8
    |   +--rw flexe-slot-status? slot-status-enumeration
  +--rw flexe-client-list* [client-id]
    | +--rw client-id       uint16
    | +--rw flexe-client-if? if:interface-ref
    | +--rw mapped-slot-list* [mapped-slot-id]
    | | +--rw mapped-slot-id  uint8
    | | +--rw mapped-phy-number? uint8
    | +--ro flexe-client-status? uint8
  +--ro flexe-group-status? uint8
```

module: ietf-interfaces-flexe-client

augment /if:interfaces/if:interface:

```
+--rw flexe-client
  +--ro mac-address
  +--rw group-number?      uint32
```

Progress After IETF 104

- Since FlexE client is decoupled from the FlexE PHY, it is modeled as a new type of interface, so that new FlexE clients can be more appropriately modeled, and easily be augmented to support some new MAC layer features, such as flow control, and etc
- Keep the module simple, remove the data plane internal implementation dependent artifacts (where management and control planes do not care), such as FlexE Instance, Calendar A and B.
- Two new authors are added

Comparisons with draft-xiaobn-ccamp-flexe-yang-mod

■ Commonalities

- Support of FlexE interface by binding some Ethernet PHYs
- Configure a FlexE client with some FlexE slots

■ Differences

draft-jiang-ccamp-flexe-yang

1. *Target at generic FlexE interfaces for routers and other transport equipments*
2. *FlexE Group modeled as an interface*
3. *In parallel, flexe-phy-list and flexe-client-list are contained in flexe-group*
4. *FlexE instance, Calendar A, B are not modeled*
5. *calendar-slot-list keeps track of all slot usage in a PHY*
6. *Only mapped slots are modeled*
7. *FlexE Client represents a new type of interface*
8. *Only local parameters are included*
9. *TX and RX parameters for FlexE are the same, thus not modeled separately*
10. *Support status retrieval of FlexE Group, PHYs and clients*

draft-xiaobn-ccamp-flexe-yang-mod

1. *Target at G.8023 (ETN) compatible equipments*
2. *FlexE Groups are modeled, but a Flexe group is not modeled as an interface*
3. *In parallel, flexe-groups and flexe-clients are contained in flexe-configuration*
4. *FlexE instance, Calendar A, B are modeled*
5. *Unavailable slots and unequipped instances are modeled, but no track of slot usage except those used in flexe-clients*
6. *Both mapped slots and actual bandwidth of a client are modeled*
7. *FlexE Client refers to a network interface*
8. *Both local and remote parameters are included*
9. *Both TX and RX parameters are included*
10. *No support of status retrieval*

Next Step

- Some authors of draft-jiang-ccamp-flex-e-yang and draft-xiaobn-ccamp-flex-e-yang-mod had discussed the possibility of combining these two drafts
- Considering we had quite different opinions on the target and methodology of the FlexE YANG model, we decided to update the drafts in its own right, until our WG makes a decision on how this work shall be proceeded
- Call for more WG reviews, and request poll for WG consensus
- Update the draft according to WG consensus

Thank You