Analysis for FlexE control model & A YANG Data Model for Flex Ethernet(FlexE)

draft-xiaobn-ccamp-flexe-yang-mod-02
draft-wang-ccamp-flexe-control-analysis-02

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Content

- Update of drafts
- Progress in OIF and ITU-T SG15
- Comparison with other drafts
- Answer to the Question in Mailing list
- Next step

Updates

- Updates to FlexE modelling draft
  - Expected values of FlexE group and client are added, which could be used to verify the correc tness of configuration (e.g., mismatch detection).
  - Two configuration modes for FlexE client.
  - FlexE client slot allocation information.
- A new author: Sivakumar Munagapati(Cisco)

- FlexE analysis draft was updated accordingly to help understand the FlexE modelli ng draft.

Updates

- FlexE client slot allocation information

```
container alloc-slots{
  description
    "Slots are allocated on the mux(Transmit-direction).";
  container tx-alloc-A-slots{
    uses slot-list;
     description
       "Slots in A calendar are allocated on the mux.
        Refer to TxCCA in G.8023.";
  }
  container tx-alloc-B-slots{
    uses slot-list;
     description
       "Slots in B calendar are allocated on the mux.
        Refer to TxCCB in G.8023.";
  }
```

- Analysis:
  - Same as FlexE group, the FlexE client have the semantics of an Ethernet PHY. The processes of creating FlexE client, creating FlexE group and mapping between them all happen inside PCS.
  - Defining FlexE client as a separate layer is not correct. From network point of view, both FlexE client and group exists in the same network layer. The FlexE client is aware of the existence of slots.

Updates

- Expected values
  - Mismatch detecting

```
+--rw expected-group-number?   uint32
+--rw expected-phy-map?        string
+--rw expected-cal-cfg?        flexe-tp:calendar-AorB

+--rw rx-expected-A-slots
|  +--rw instance-slots* [flexe-inst-num slot-id]
|     +--rw flexe-inst-num    uint8
|     +--rw slot-id           uint8
+--rw rx-expected-B-slots
   +--rw instance-slots* [flexe-inst-num slot-id]
      +--rw flexe-inst-num    uint8
      +--rw slot-id           uint8
```

- Configuration mode for FlexE client
  - Mentioned in FlexE IA, not in [ITU-T G.8023]. Maybe because G.8023 is just an equipment function document.

```
+--:(STATIC-MODE)
|  +--rw rx-alloc-slots
|  |  +--rw instance-slots* [flexe-inst-num slot-id]
|  |     +--rw flexe-inst-num    uint8
|  |     +--rw slot-id           uint8
|  +--rw rx-expected-A-slots
|  |  +--rw instance-slots* [flexe-inst-num slot-id]
|  |     +--rw flexe-inst-num    uint8
|  |     +--rw slot-id           uint8
|  +--rw rx-expected-B-slots
|     +--rw instance-slots* [flexe-inst-num slot-id]
|        +--rw flexe-inst-num    uint8
|        +--rw slot-id           uint8
+--:(MASTER-SLAVE)
```

Progress in OIF and ITU-T SG15

- No progress in OIF.

- ITU-T SG15 consented the G.8023 Amd1 to include the equipment function of Fle xE IA 2.0, i.e, FlexE instance. The FlexE yang model aligns with the latest version o f G.8023.

- One FlexE mode contribution was submitted and discussed in ITU-T Q14/15 (equi pment configuration), people were fine with contribution except FlexE configurati on mode.
- Get confirmed from FlexE IA Editor’s contribution that FlexE client has the same s emantics with PHY, and talked f2f that the slots allocated can be asymmetric.

Comparison with other drafts - analysis

- **What we have except the common stuffs of these two drafts?**
  - Expected values are included in the model to configure at the destination side to help verify t he mismatch case.
  - Configuration of different type of calendar (A or B), this can help when add or remove FlexE cl ient.
  - Support the configuration FlexE 100G instance documented in FlexE 2.0.
  - FlexE client configuration mode

- **What the draft-jiang has and we don't?**
  - FlexE group interface. In draft-xiaobn.., we just use the group ID.
  - No strong requirements to do so, as FlexE already define identifiers for the group.
  - Increase the complexity.

Comparison with other drafts - analysis

- **What we both have but with different modelling method?**
  - FlexE client sub-interface. Draft-jiang augments the basic interface with MAC address and Fle xE group number, while in our draft, interface is employed.
  - FlexE client refers to the part below MAC and above FlexE shim. It can serve as a transition be tween packet and 64/66B.
  - Both solutions are fine, would rather not touch the interface definition.

- **Configuration mode**
  - Get confirmed from two equipment vendors and one chip vendor that this is useful. Q14/15 s uggest talk with Q11/15 experts about this.

Answer to the question in mailing list

- In FlexE, client-number should have a local significance, but your model mandates a global significance of client-number (as 65534 is the maximum of valid client-nu mber, a global client-number will not be scalable in a large network)….

- Answer:
  - Not global, also under the scope of one specific flexe group.

```
+--rw flexe-client* [client-number]
   +--rw client-number          uint16
   +--rw bandwidth
   |  +--rw signal-type?    flexe-client-signal-rate
   |  +--rw mac-rate?       rt-types:bandwidth-ieee-float32
   +--rw flexe-group-number?   uint32
```

Next step

- Request WG adoption. Requirements of FlexE modelling is quite clear now.
- Keep working on the FlexE analysis and modelling drafts.

Thanks