Decoupling TSN YANG modules from .1Q bridge

P802.1Qcw/D1.2 comment resolution

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Context

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Comments #13, #14, #15, #16 against P802.1Qcw/D1.2:

https://www.ieee802.org/1/files/private/cw-drafts/d1/802-1Qcw-d1-2-pdis-v00.pdf

→ *“Tie QoS variables to Interfaces, not bridge-port.”*

https://www.ieee802.org/1/files/public/docs2020/cw-finn-interfaces-not-ports-1120-v04.pdf

Proposal from YANGsters (Scott Mansfield)

→ Copy Qcx!

YANG models and its relationship with .1Q bridge

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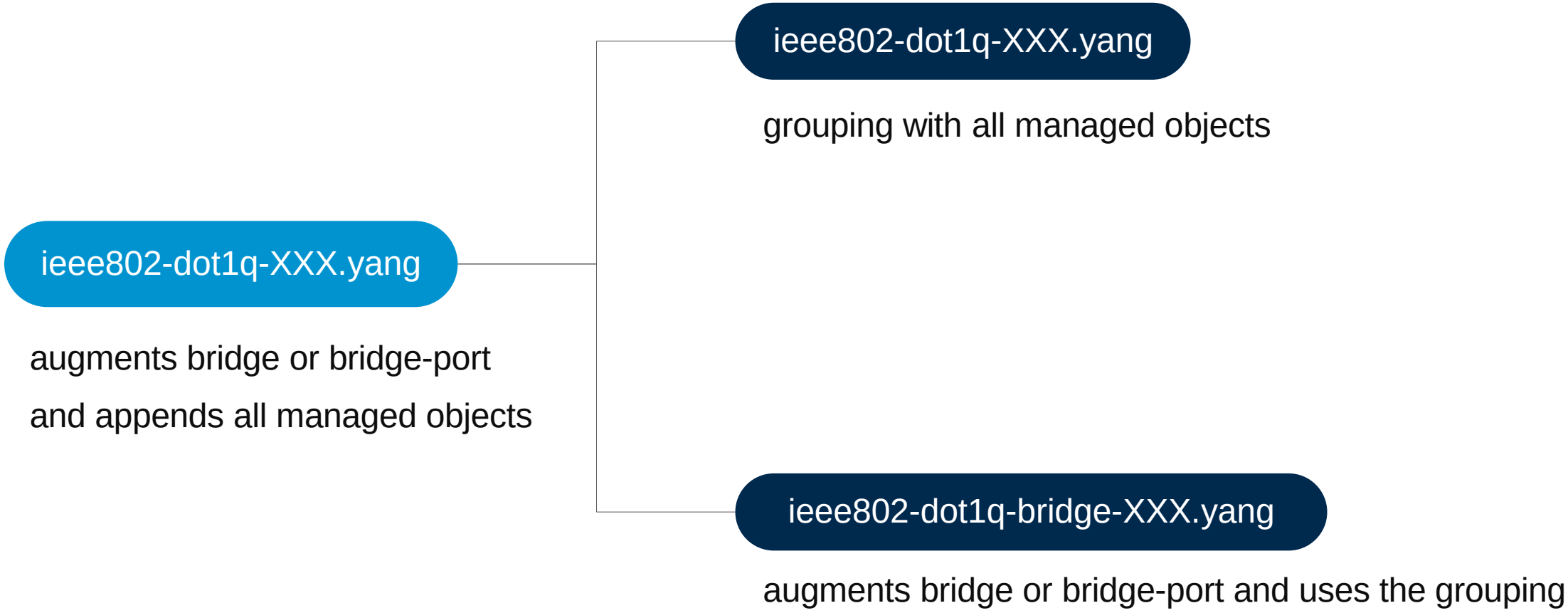

Scheduled Traffic and Frame Preemption

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ieee802-dot1q-sched.yang

```
…
grouping sched-parameters {
  container gate-parameter-table {…}
}
```

ieee802-dot1q-bridge-sched.yang

```
…
augment
"/if:interfaces/if:interface/dot1q:bridge-port" {
    description
      "...";
     uses sched:sched-parameters;
}
```

ieee802-dot1q-preemption.yang

```
…
grouping preemption-parameters {
  container frame-preemption-parameters {…}
}
```

ieee802-dot1q-bridge-preemption.yang

```
…
augment
"/if:interfaces/if:interface/dot1q:bridge-port" {
    description
      "...";
    uses preempt:preemption-parameters;
}
```

What about PSFP?

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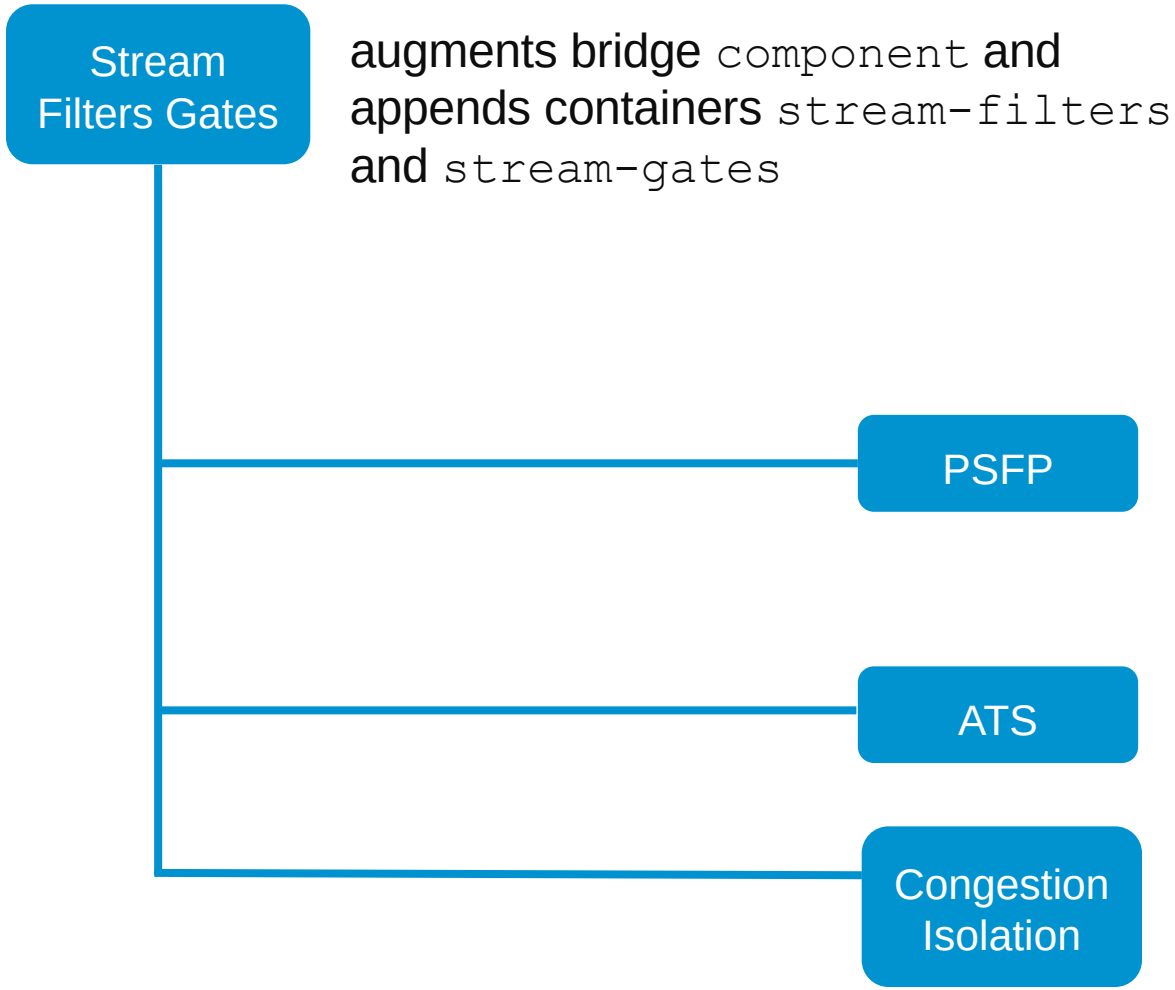
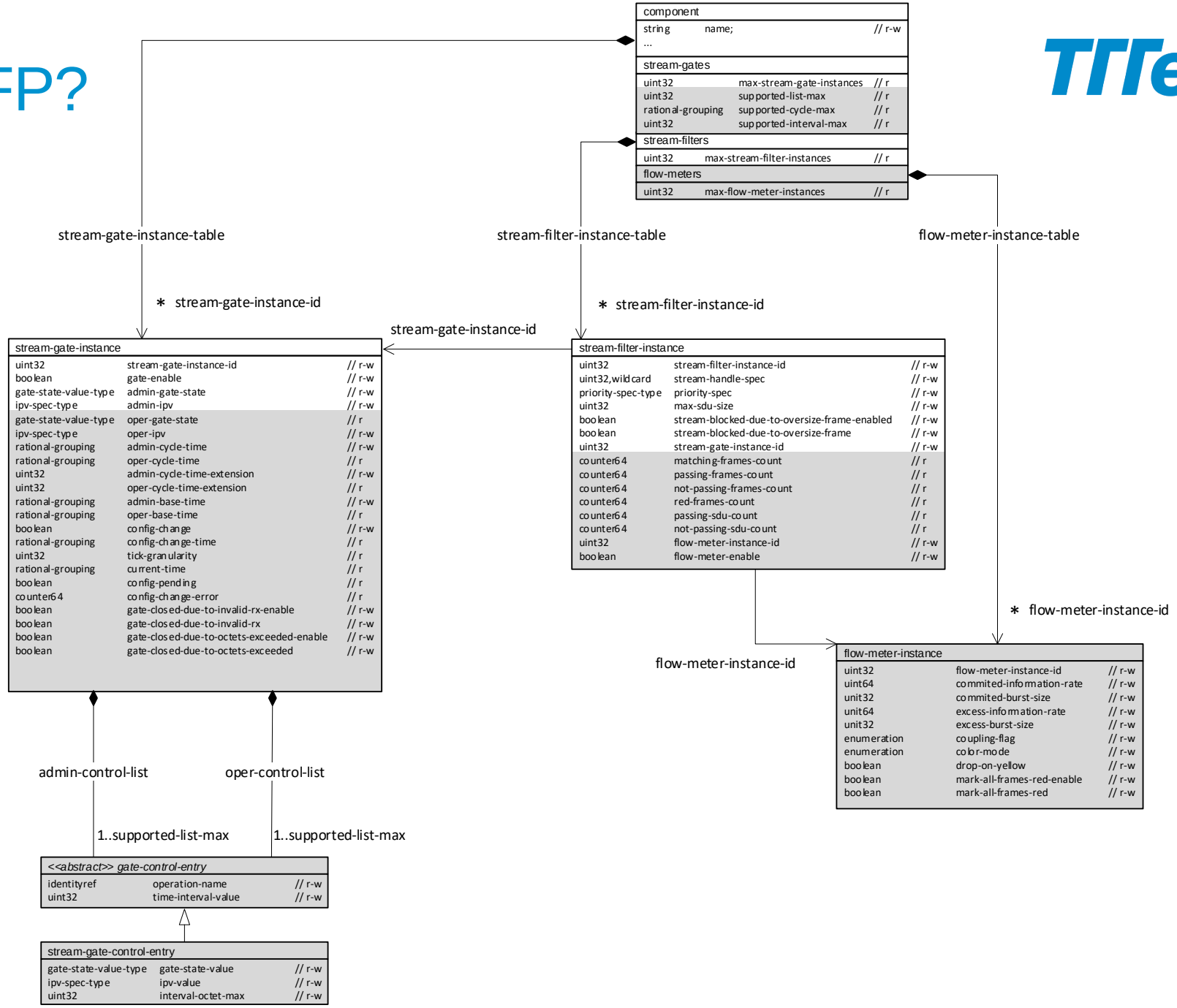


What about PSFP?



NOTE—Items shaded in gray indicate extension provided by the PSFP YANG model.

Stream filters gates and PSFP (1/2)

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ieee802-dot1q-stream-filters-gates.yang

```
…
grouping sfsg-parameters {
  container stream-gates {…}
  container stream-filters {…}
}
```

ieee802-dot1q-psfp.yang

```
…
grouping psfp-parameters{
  container flow-meters {…}
  uses sfsg:sfsg-parameters {
    augment "stream-filters/stream-filter-instance-table“ {…}
    augment “stream-gates“ {…}
    augment “stream-gates/stream-gate-instance-table” {…}
  }
}
```

Stream filters gates and PSFP (2/2)

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ieee802-dot1q-bridge-stream-filters-gates.yang

```
…
augment "/dot1q:bridges/dot1q:bridge/dot1q:component" {
  description
    "…";
  uses sfsg:sfsg-parameters;
}
```

ieee802-dot1q-bridge-psfp.yang

```
…
augment "/dot1q:bridges/dot1q:bridge/dot1q:component" {
  description
    "…";
  uses psfp:psfp-parameters;
}
```

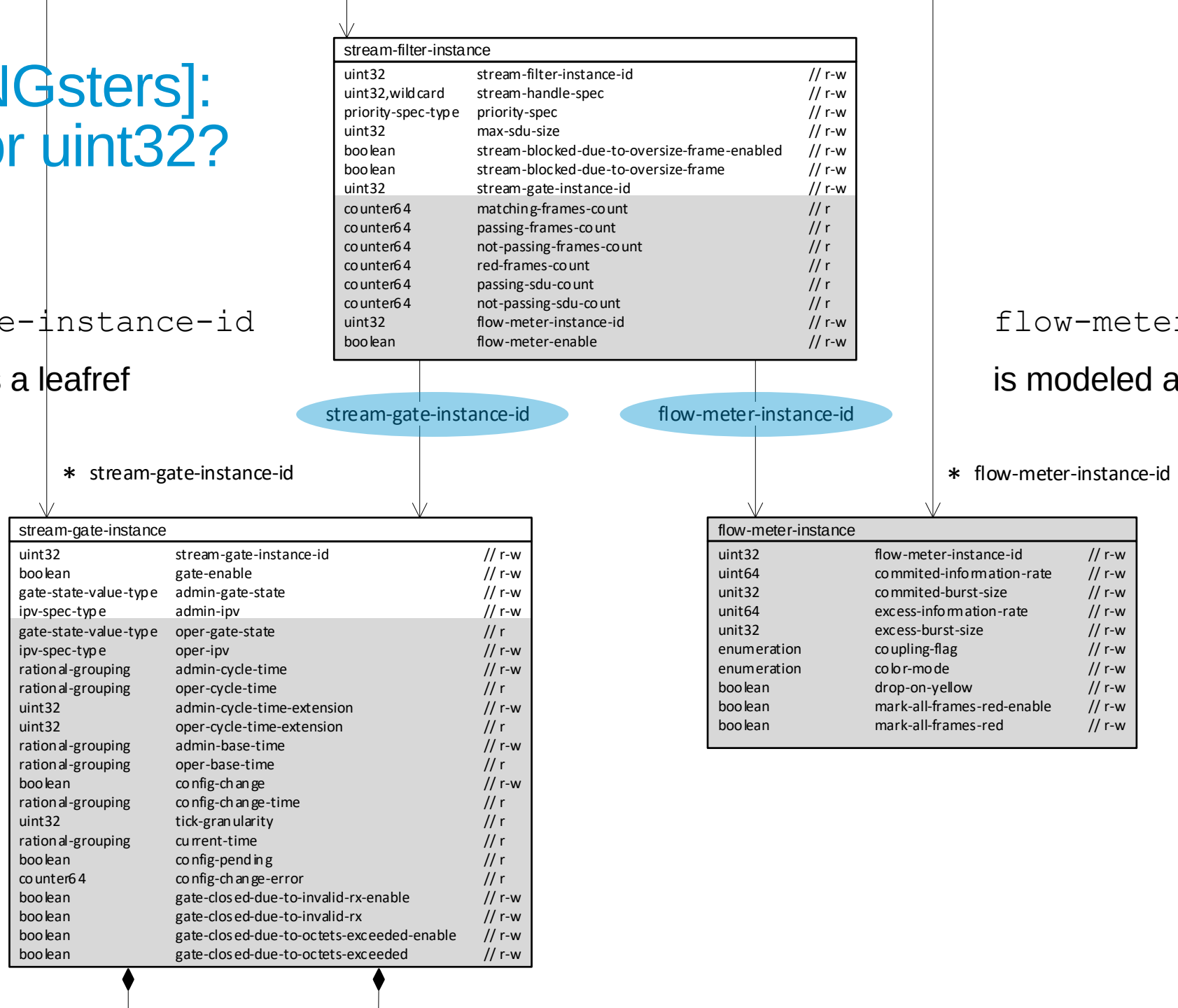
[for YANGsters]: leafref or uint32?

`stream-gate-instance-id`

is modeled as a leafref

`flow-meter-instance-id`

is modeled as a uint32



using leafref…

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ieee802-dot1q-stream-filters-gates.yang

```
typedef stream-gate-ref {
  type leafref {
    path
      '/dot1q:bridges'+ '/dot1q:bridge'+ '/dot1q:component'+
      '/sfsg:stream-gates'+ '/sfsg:stream-gate-instance-table'+'/sfsg:stream-gate-instance-id';
    }
    description
      "…";
}
…
leaf stream-gate-ref {
  type stream-gate-ref;
  mandatory true;
  description
    "…";
  reference
    "12.31.2.4 of IEEE Std 802.1Qcr-2020";
}
```

and using uint32

ieee802-dot1q-psfp.yang

```
leaf flow-meter-instance-id {
  type uint32;
  description
    “Flow meter instance that is associated with the stream filter.";
  reference
    "8.6.5.5 of IEEE Std 802.1Qcr
     12.31.2.6 of IEEE Std 802.1Qcr";
}
```

but leafref doesn't seem to like relative paths…

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ieee802-dot1q-stream-filters-gates.yang

```
typedef stream-gate-ref {
  type leafref {
    path
      '/dot1q:bridges'+
      '/dot1q:bridge'+
      '/dot1q:component'+
      '/sfsg:stream-gates'+
      '/sfsg:stream-gate-instance-table'+
      '/sfsg:stream-gate-instance-id';
    }
    description
      "…";
}
```

```
module: ieee802-dot1q-stream-filters-gates
  augment /dot1q:bridges/dot1q:bridge/dot1q:component:
    +--rw stream-filters
    |  +--rw stream-filter-instance-table*
                                [stream-filter-instance-id]
    …
    |  |  +--rw stream-gate-ref        stream-gate-ref

    …
    +--rw stream-gates
       +--rw stream-gate-instance-table*
                                  [stream-gate-instance-id]
       |  +--rw stream-gate-instance-id    uint32
       …
```

What about other “TSN” modules?

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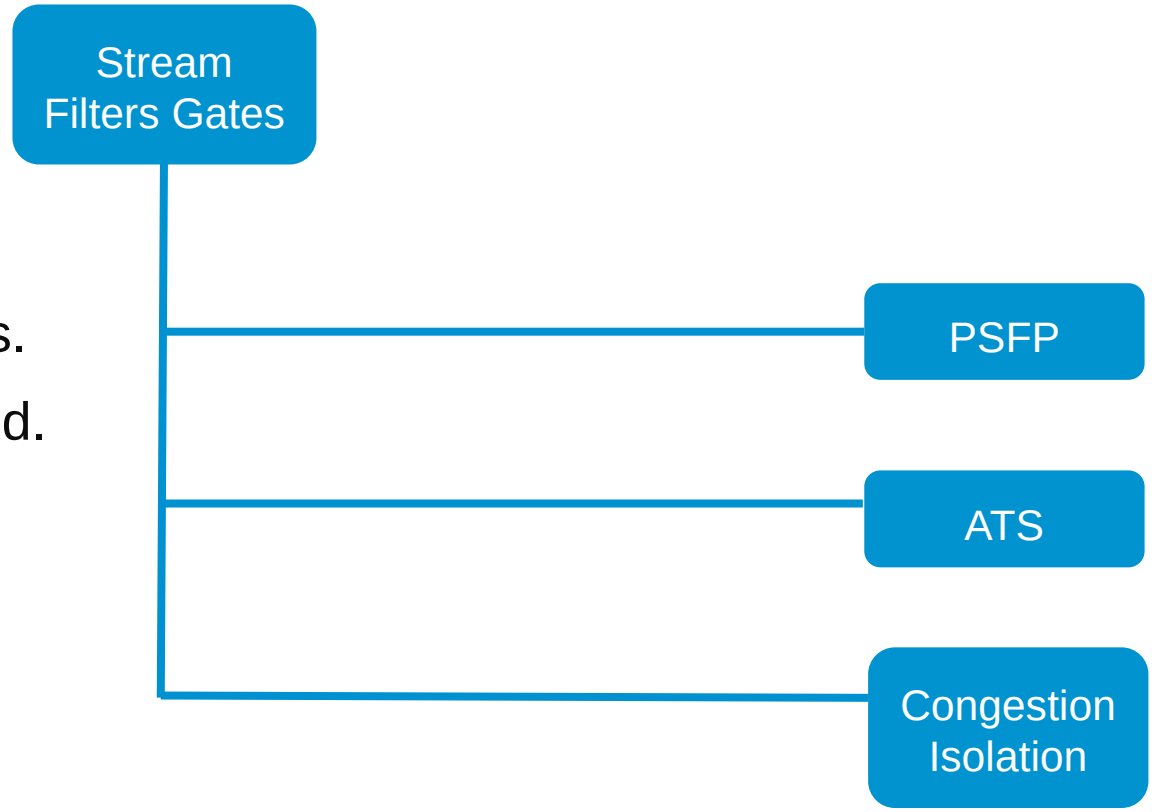
Are there other YANG modules that would be impacted / benefited by this change?

- Changing the structure of Stream Filter gates model breaks ATS and Congestion Isolation models.
- ATS and Congestion Isolation should be re-structure in the same way as Stream Filter Gates.
- The effort needed for this change must be studied.



Other models?

Questions

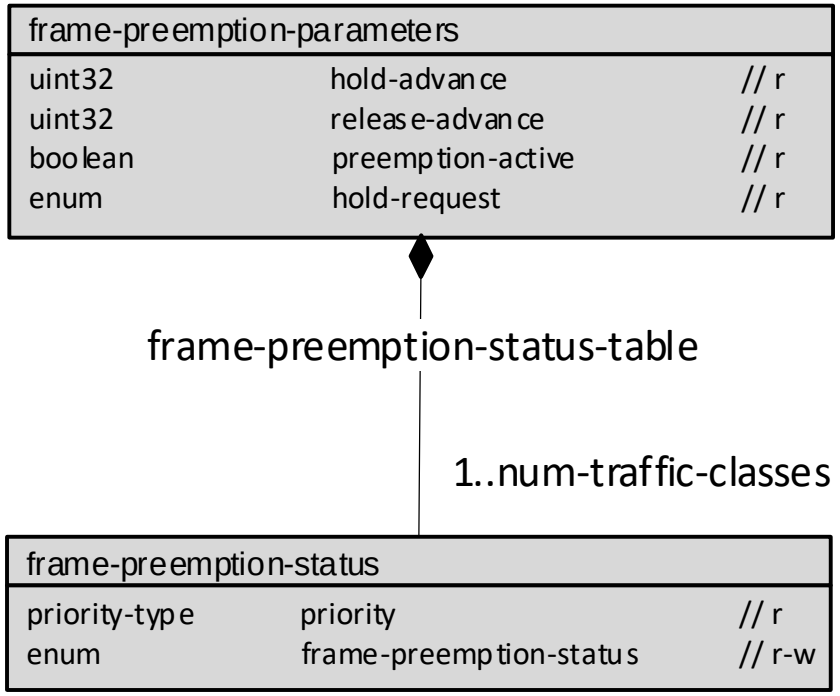
About the general structure of the TSN YANG modules:

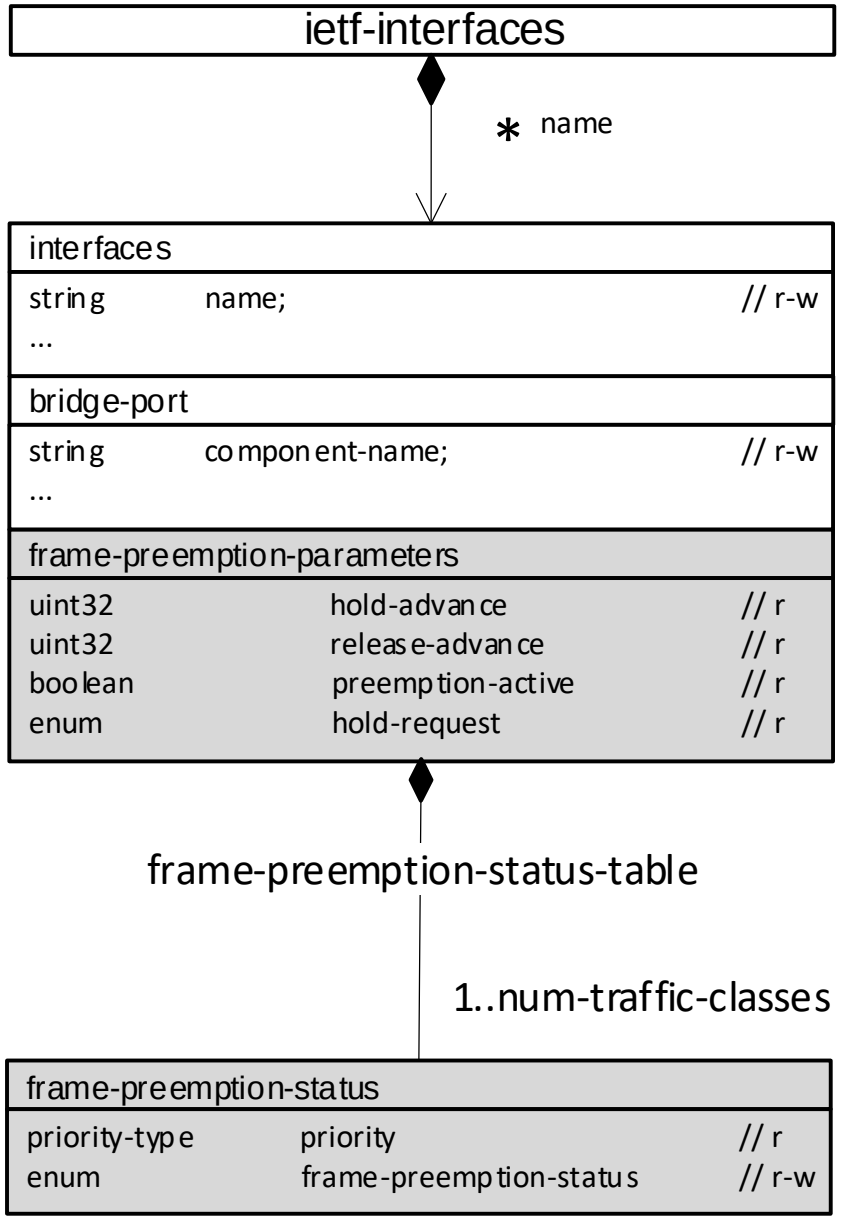
- Does the proposed approach satisfy the commenter request?
- Which other YANG modules should be structured this way?
- [YANGsters]: leafref or uint32? How do we solve the `leafref` problem?

What about Clause 48? (1/3)

48.3 802.1 YANG Model:

- Structure is ok.
- Update UML models:
  - Should they reflect the relationship with .1Q bridge model?





What about Clause 48? (2/3)

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48.4 Structure of the YANG Model

- Do we want to explain here how to use the models by non- .1Q bridges?

48.4.6 Scheduled Traffic model

A system implementing the Scheduled Traffic model (48.3.4) implements YANG modules as described in Table 48-7.

Table 48-7—YANG module dependencies for the Scheduled Traffic model

YANG Module	Notes
ieee802-types	-
ieee802-dot1q-types	-
ieee802-dot1q-bridge	-
ieee802-dot1q-sched	-

What about Clause 48? (3/3)

48.5 Definition of the 802.1Q YANG modules:

- New modules don’t have trees.
- Include trees of the “bridge” modules?
- Structure is ok.

48.6 YANG modules:

- Update modules.
- Add “bridge” modules. One per mechanism?
- Structure is ok.

Questions

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About the general structure of the TSN YANG modules:

- Does the proposed approach satisfy the commenter request?
- Which other YANG modules should be structured this way?
- [YANGsters]: leafref or uint32? How do we solve the `leafref` problem?

About Clause 48:

- Do we want to include the “bridge” counterpart of each TSN YANG module?
- Do we want to add information about how to use TSN YANG modules in non-.1Q bridges?

What about the procedure?

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We need to change Qcw…

Comments against Qcw are on Scheduled Traffic, Frame Preemption and PSFP models.

… and Qcr / Q-2021

The change in PSFP requires updating Stream Filter Gates model.

→ Do we need a maintenance issue for this? or is it enough with the comment resolution?

… and Qcz!

Restructuring Stream Filter Gates breaks ATS and Congestion Isolation models.

→ Can we fix this in Qcz SA ballot? or do we need a maintenance issue?

Questions

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About the general structure of the TSN YANG modules:

- Does the proposed approach satisfy the commenter request?
- Which other YANG modules should be structured this way?
- [YANGsters]: leafref or uint32? How do we solve the `leafref` problem?

About Clause 48:

- Do we want to include the “bridge” counterpart of each TSN YANG module?
- Do we want to add information about how to use TSN YANG modules in non-.1Q bridges?

About the procedure:

- How do we do it?