802.3 Ethernet Interface YANG Task Force (802.3cf) and RMON MIB (RFC 3635)

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2017 Jan 30, IETF/IEEE liaison meeting

Ethernet 802.3 YANG Task Force

- IEEE 802.3cf is defining Ethernet YANG models:

  E.g. basic Ethernet interface, power of Ethernet, PON, Physical Link OAM (Ethernet in the first mile)
- A lot of content was previously defined in various MIBs (e.g. Etherlike MIB - RFC 2665)
- These MIBs were originally defined in IETF, but subsequently transitioned to IEEE 802.3 (via RFC 7448). Now defined in 802.3.1.

Ethernet 802.3 YANG – RMON MIB

- Some Ethernet related statistics are defined in the RMON MIB (RFC 2819)
  - Of particular interest is the Ethernet-Statistics group
- This MIB doesn't only define Ethernet related data, and ownership was not transitioned to 802.3.
- 802.3cf would like to define YANG for some of the Ethernet counters previously defined in the RMON MIB

Ethernet 802.3 YANG – RMON 2

- Don’t plan on defining 802.3 YANG for all of RMON MIB Ethernet counters:
  - Only those that are supported by underlying Ethernet 802.3 clause 30 registers (which may be extended).
  - Only those that are still relevant on modern hardware.
  - 802.3cf proposes that some Ethernet related fields are defined by IETF YANG (i.e. those that are not, or cannot, be tied back to clause 30)
  - The proposal is to add them to the **interfaces-ethernet-like module,** this is being defined in **draft-ietf-netmod-intf-ext-yang** (I’m an author of this draft)

Ethernet 802.3 YANG – Questions

- Is anyone aware of any plans to convert the RMON MIB to YANG?
  - If so which WG, NETMOD?
  - If this work was ever done, then the Ethernet related counters could just be left out.
- Does anyone (particularly from IETF) have any comments or concerns on this approach?
  - I intend to run this approach via the NETMOD WG as well.

Thank you!

Backup Slides

IETF interface YANG statistics

(For reference. Every Ethernet interface always has these)

```
+--ro statistics
   +--ro discontinuity-time    yang:date-and-time

   +--ro in-octets?            yang:counter64 = (total good bytes, inc fcs chars)
   +--ro in-unicast-pkts?      yang:counter64 = good uni pkts    (not drop/error/
   +--ro in-broadcast-pkts?    yang:counter64 = good bcast pkts           unknown)
   +--ro in-multicast-pkts?    yang:counter64 = good mcast pkts      "
   +--ro in-discards?          yang:counter32 = e.g. QoS/ACL drops
   +--ro in-errors?            yang:counter32 = e.g. Frame errors
   +--ro in-unknown-protos?    yang:counter32 = e.g. Unknown proto drops.

   +--ro out-octets?           yang:counter64
   +--ro out-unicast-pkts?     yang:counter64
   +--ro out-broadcast-pkts?   yang:counter64
   +--ro out-multicast-pkts?   yang:counter64
   +--ro out-discards?         yang:counter32
   +--ro out-errors?           yang:counter32
```

Existing RMON MIB Ethernet counters

(For reference purposes only, defined in RFC 2819)

```
etherStatsDropEvents              Counter32,  // Drop due to lack of resources
etherStatsOctets                  Counter32,  // Total bytes (good + bad)
etherStatsPkts                    Counter32,  // Total pkts (good + bad)
etherStatsBroadcastPkts           Counter32,  // Total good bcast pkts
etherStatsMulticastPkts           Counter32,  // Total good mcast pkts
etherStatsCRCAlignErrors          Counter32,  // 64 <= pkt <= 1518, bad CRC/align
etherStatsUndersizePkts           Counter32,  // pkt < 64, good CRC
etherStatsOversizePkts            Counter32,  // pkt > 1518, good CRC
etherStatsFragments               Counter32,  // pkt < 64, bad CRC
etherStatsJabbers                 Counter32,  // pkt > 1518, bad CRC
etherStatsCollisions              Counter32,  // Collision estimate
etherStatsPkts64Octets            Counter32,  // 64 byte pkts
etherStatsPkts65to127Octets       Counter32,  // 65 – 127 byte pkts
etherStatsPkts128to255Octets      Counter32,  // 128 – 255 byte pkts
etherStatsPkts256to511Octets      Counter32,  // 256 – 511 byte pkts
etherStatsPkts512to1023Octets     Counter32,  // 512 – 1023 byte pkts
etherStatsPkts1024to1518Octets    Counter32,  // 1024 – 1518 byte pkts
```

802.3 Ethernet Frame/Phy Counters

(Combined Etherlike MIB and RMON MIB)

```
This counters are in addition to the ietf-interfaces statistics.
interfaces-state/interface/ethernet/frame-statistics:
  in-total-octets           counter64, // Total received bytes (good + bad)
  in-total-pkts             counter64, // Total received pkts (good + bad)
  in-pkts-errors-fcs        counter64, // 64 <= pkt <= 1518, bad CRC or alignment
  in-pkts-errors-runt       counter64, // pkt < 64
  in-pkts-errors-giant      counter64, // pkt > MRU
  out-total-octets          counter64, // Total transmitted bytes (good + bad)
  out-total=pkts            counter64, // Total transmitted pkts (good + bad)
  // May still be some generic input/output errors missing.

interfaces-state/interface/ethernet/phy-statistics:
  in-errors-symbol            counter64, // symbol errors
  lpi {   <- TODO, make LPI a feature.
    in-lpi-transitions        counter64, // lpi transitions
    in-lpi-time               decimal64, // lpi time (seconds, 6 d.p.)
    out-lpi-transitions       counter64, // lpi transitions
    out-lpi-time              decimal64, // lpi time (seconds, 6 d.p.)
  }
```