

```

module ieee802-ethernet-pon {
  yang-version 1.1;

  namespace "urn:ieee:std:802.3:yang:ieee802-ethernet-pon";

  prefix "eth-pon";

  import ietf-yang-types {
    prefix "yang";
    reference "IETF RFC 7223";
  }

  import ietf-interfaces {
    prefix "if";
    reference "IETF RFC 7223";
  }

  import ieee802-ethernet-interface {
    prefix "eth-if";
  }

  organization
    "IEEE 802.3 Ethernet Working Group
    Web URL: http://www.ieee802.org/3/";

  contact
    "Web URL: http://www.ieee802.org/3/cf/";

  description
    "This module contains a collection of YANG definitions for
    managing the Multi Point Control Protocol for Ethernet PON (EPON),
    as defined in IEEE Std 802.3, Clause 64/77

    This YANG module augments the 'ethernet' module.";

  reference
    "IEEE Std 802.3-2018, Clause 64/77, unless dated explicitly";
    "IEEE Std 802.3.1-2013, Clause 9, unless dated explicitly";

  typedef mpcp-supported {
    type boolean;

    description
      "This object indicates that the given Ethernet interface
      supports MPCP, i.e., it is an Ethernet PON (EPON) interface.";
  }

  typedef mpcp-llid {
    type uint64 {
      range "0 .. 32767";
    }
  }

  description
    "Logical Link Identifiers (LLIDs) are used to identify a single
    MAC from a number of MACs which may be present in the
    EPON OLT or ONU. LLIDs between the value of 0x07FFE
    and 0x7FFF are reserved for ONU discovery and registration.

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Other LLIDs are dynamically assigned by the OLT during the registration process. For a complete description of how the LLID is used in an EPON device; see IEEE Std 802.3, 65.1.3.3 for 1G-EPON and 76.2.6.1.3 for 10G-EPON.";

```
reference
  "IEEE Std 802.3, 76.2.6.1.3.2 (1G-EPON and 10G-EPON)";
}

typedef mpcp-maximum-queue-count-per-report {
  type uint8 {
    range "0..7";
  }

  default "0";

  description
    "Defines the maximum number of queues (0-7) in the REPORT
    MPCPDU as defined in IEEE Std 802.3, Clause 64 and Clause 77.";
}

typedef mpcp-llid-count {
  type uint64 {
    range "0 .. 32767";
  }

  description
    "Indicates the number of registered LLIDs. The initialization value is
    0. This is applicable for an OLT with the same value for all virtual
    interfaces and for an ONU.";

  reference
    "IEEE Std 802.3, 76.2.6.1.3.2 (1G-EPON and 10G-EPON)";
}

typedef mpcp-admin-state {
  type enumeration {

    enum enabled {
      description
        "When selecting the value of 'enabled', the MultiPoint
        Control Protocol sublayer on the OLT / ONU is enabled.";
    }

    enum disabled {
      description
        "When selecting the value of 'disabled', the MultiPoint
        Control Protocol sublayer on the OLT / ONU is disabled.";
    }
  }

  description
    "Enumeration of valid administrative states for a MultiPoint MAC
    Control sublayer on the OLT or ONU";

  reference
```

```
    "IEEE Std 802.3, 30.3.5.2.1";
}

typedef mpcp-mode {
    type enumeration {
        enum olt {
            description
                "mpcp mode: olt";
        }

        enum onu {
            description
                "mpcp mode: onu";
        }
    }

    description
        "Enumeration of valid mpcp modes for Ethernet interfaces.";

    reference
        "IEEE Std 802.3, 30.3.5.1.3";
}

typedef mpcp-logical-link-state {
    type enumeration {
        enum unregistered {
            description
                "MPCP registration state: logical link is NOT registered";
        }

        enum registering {
            description
                "MPCP registration state: logical link is currently in the
                process of registering";
        }

        enum registered {
            description
                "MPCP registration state: logical link is currently
                registered";
        }
    }

    description
        "Enumeration of valid MPCP registration states for Ethernet
        interfaces";

    reference
        "IEEE Std 802.3, 30.3.5.1.6";
}

typedef mpcp-logical-link-admin-state {
    type enumeration {
        enum reset {
            description
                "When read, the value of 'reset' indicates that the given
                logical link on the OLT / ONU has been reset."
        }
    }
}
```

```
        When set, the value of 'reset' requests the OLT / ONU to
        reset the given logical link.";
    }

enum operate {
    description
    "When read, the value of 'operate' indicates that the
    given logical link on the OLT / ONU has moved into
    operating mode.
    When set, the value of 'operate' requests the OLT / ONU to
    move the given logical link into operating mode.";
}

enum disabled {
    description
    "When read, the value of 'disabled' indicates that the
    given logical link on the OLT / ONU has been disabled.
    When set, the value of 'disabled' requests the OLT / ONU
    to disable the given logical link.";
}

enum enabled {
    description
    "When read, the value of 'enabled' indicates that the
    given logical link on the OLT / ONU has been enabled.
    When set, the value of 'enabled' requests the OLT / ONU to
    enable the given logical link.";
}

enum unknown {
    description
    "When read, the value of 'unknown' indicates that the
    status of the given logical link on the OLT / ONU is
    currently not known.
    An attempt to set the value of 'unknown' is illegal.";
}

enum registered {
    description
    "When read, the value of 'registered' indicates that the
    given logical link on the OLT / ONU has been registered.
    When set, the value of 'registered' requests the OLT / ONU
    to register the given logical link.";
}

enum deregistered {
    description
    "When read, the value of 'deregistered' indicates that the
    given logical link on the OLT / ONU has been deregistered.
    When set, the value of 'deregistered' requests the
    OLT / ONU to deregister the given logical link.";
}

enum reregistered {
    description
    "When read, the value of 'reregistered' indicates that the
    given logical link on the OLT / ONU has been reregistered.
```

```
        When set, the value of 'reregistered' requests the
        OLT / ONU to reregister the given logical link.";
    }
}

description
    "Enumeration of valid administrative states for a logical link
    on the OLT or ONU";
}

typedef ompe-mode {
    type enumeration {
        enum unknown {
            description
                "omp-emulation mode: unknown = system is initializing";
        }

        enum olt {
            description
                "omp-emulation mode: olt";
        }

        enum onu {
            description
                "omp-emulation mode: onu";
        }
    }

    description
        "Enumeration of valid OMP-Emulation modes for Ethernet
        interfaces";

    reference
        "IEEE Std 802.3, 30.3.7.1.2";
}

typedef fec-capability {
    type enumeration {
        enum unknown {
            description
                "FEC capability: unknown = system is initializing";
        }

        enum supported {
            description
                "FEC capability: supported";
        }

        enum "not supported" {
            description
                "FEC capability: not supported";
        }
    }

    description
        "Enumeration of valid FEC capability values for Ethernet";
}
```

```

        interfaces with enabled MPCP";

reference
    "IEEE Std 802.3, 30.5.1.1.15";
}

typedef fec-mode {
    type enumeration {
        enum unknown {
            description
                "FEC mode: unknown = system is initializing";
        }

        enum disabled {
            description
                "FEC mode: disabled = FEC is disabled for the given
                logical link (both Tx and Rx directions)";
        }

        enum enabled-Tx-Rx {
            description
                "FEC mode: enabled-Tx-Rx = FEC is enabled for the given
                logical link in both Tx and Rx directions";
        }

        enum enabled-Tx-only {
            description
                "FEC mode: enabled-Tx-only = FEC is enabled for
                the given logical link but only in Tx direction";
        }

        enum enabled-Rx-only {
            description
                "FEC mode: enabled-Rx-only = FEC is enabled for
                the given logical link but only in Rx direction";
        }
    }

description
    "Enumeration of valid FEC modes for Ethernet interfaces";

reference
    "IEEE Std 802.3, 30.5.1.1.16";
}

typedef trx-admin-state {
    type enumeration {
        enum enabled {
            description
                "When read as 'enabled', the transmitter is enabled and
                operating under the control of the logical control protocol.
                When set to 'enabled', the transmitter is enabled to
                operate under the control of the logical control protocol.";
        }

        enum disabled {
            description

```

```

        "When read as 'disabled', the transmitter is disabled.
        When set to 'disabled', the transmitter is disabled.";
    }
}

description
    "Enumeration of valid administrative states for an optical
    transceiver";

reference
    "IEEE Std 802.3.1, dot3ExtPkgOptIfTransmitEnable";
}

feature trx-power-level-reporting-supported {

    description
        "This object indicates the support for optical transceiver power
        level monitoring and reporting capability. When 'true', the given
        interface supports the optical power level monitoring and reporting
        function. Otherwise, the value is 'false'.";

    reference "";
}

feature
fec-supported {
    description
        "This object indicates the support of operation of the optional FEC
        sublayer of the 1000BASE-PX PHY specified in IEEE Std 802.3, 65.2. The
        value of 'unknown' is reported in the initialization, for non FEC
        support state or type not yet known. The value of 'not supported' is
        reported when the sublayer is not supported. The value of 'supported'
        is reported when the sublayer is supported. This object is applicable
        for an OLT, with the same value for all logical links, and for an ONU.
        All objects in the fec/statistics container have a zero value
        when the interface is not supporting FEC.";

    reference
        "IEEE Std 802.3, 30.5.1.1.15";
}

augment "/if:interfaces/if:interface/eth-if:ethernet" {
    description
        "Augments the definition of Ethernet interface (/if:interfaces/
        if:interface/eth-if:ethernet) module with nodes
        specific to Ethernet PON (EPON)";

    leaf fec-mode {
        if-feature
            fec-supported;

        type fec-mode;

        description
            "This object reflects the current administrative state of the
            FEC function for the given logical link on an ONU or OLT."
    }
}

```

When reading the value of 'disabled', the FEC function on the given logical link is disabled.

When reading the value of 'enabled-Tx-Rx', the FEC function on the given logical link is enabled in both Tx and Rx directions.

When reading the value of 'enabled-Tx-only', the FEC function on the given logical link is enabled in Tx direction only.

When reading the value of 'enabled-Rx-only', the FEC function on the given logical link is enabled in Rx direction only.

When reading the value of 'unknown', the state of the FEC function on the given logical link is unknown or the FEC function is currently initializing.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link.";

```
reference
  "IEEE Std 802.3, 30.5.1.1.16";
}
```

```
leaf mpcp-admin-state {
  type mpcp-admin-state;
```

description

"This object reflects the current administrative state of the MultiPoint MAC Control sublayer, as defined in IEEE Std 802.3, Clause 64 and Clause 77, for the OLT / ONU.

When reading the value of 'enabled', the MultiPoint Control Protocol on the OLT / ONU is enabled.

When reading the value of 'disabled', the MultiPoint Control Protocol on the OLT / ONU is disabled.

This object is applicable for an OLT and an ONU. It has the same value for all logical links.";

```
reference
  "IEEE Std 802.3, 30.3.5.1.2";
}
```

```
leaf mpcp-logical-link-admin-state {
  type mpcp-logical-link-admin-state;
```

description

"This object reflects the current administrative state of a logical link on an ONU or OLT.

When reading the value of 'reset', the given logical link is undergoing a reset.

When reading the value of 'unknown', the current status of the given logical link is unknown and the link might be undergoing

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initialization.

When reading the value of 'operate', the given logical link is
operating normally.

When reading the value of 'disabled', the given logical link
was disabled (powered down).

When reading the value of 'enabled', the given logical link
was enabled (powered up).

When reading the value of 'registered', the given logical link
was requested to perform registration.

When reading the value of 'deregistered', the given logical
link was requested to perform deregistration.

When reading the value of 'reregistered', the given logical
link was requested to perform reregistration.

This object is applicable for an OLT and an ONU. It has a distinct
value for each logical link.";

reference
  "IEEE Std 802.3.1, dot3ExtPkgObjectRegisterAction";
}

leaf trx-transmit-admin-state {
  when
    "../eth-if:ethernet/eth-pon:mppcp-admin-state = 'enabled'";

  if-feature
    trx-power-level-reporting-supported;

  type trx-admin-state;

  description
    "This object reflects the current status of the transmitter in
    the optical transceiver.

    When read as 'enabled', the optical transmitter is enabled and
    operating under the control of the logical control protocol.

    When read as 'disabled', the optical transmitter is disabled.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.

    The value of this object is only reliable when
    /if:interfaces-state/if:interface/eth-if:ethernet/
    'mppcp-admin-state' is equal to 'enabled'.";

  reference
    "IEEE Std 802.3.1, dot3ExtPkgOptIfTransmitEnable";
}

container capabilities {

```

```

config false;
description
  "Contain all Ethernet interface specific capabilities.";

leaf mpcp-supported {
  type mpcp-supported;

  default
    "true";
  description
    "This object indicates that the given Ethernet interface
    supports MPCP, i.e., it is an Ethernet PON (EPON) interface.";
}

container statistics-mpcp {
  config false;
  description
    "This container defines a set of MPCP-related statistics
    counters of an Ethernet interface implementing MPCP, as
    defined in IEEE Std 802.3, Clause 64 and Clause 77.";

  leaf mpcp-mac-ctrl-pkts-out {
    type yang:counter64;

    units frames;

    config false;

    description
      "A count of MPCP frames passed to the MAC sublayer for
      transmission.

      This counter is incremented when a MA_CONTROL.request
      service primitive is generated within the MAC control
      sublayer with an opcode indicating an MPCP frame.

      This object is applicable for an OLT and an ONU. It has a distinct
      value for each logical link.

      Discontinuities of this counter can occur at
      re-initialization of the management system, and at other
      times as indicated by the value of the
      ifCounterDiscontinuityTime object.";

    reference
      "IEEE Std 802.3, 30.3.5.1.7";
  }

  leaf mpcp-mac-ctrl-pkts-in {
    type yang:counter64;

    units frames;

    config false;
  }
}

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description
"A count of MPCP frames passed by the MAC sublayer to the MAC Control sublayer.

This counter is incremented when a frame is received at the interface which is an MPCP frame or has a Length/Type Ethernet header field value equal to the reserved Type for 802.3_MAC_Control as specified in IEEE Std 802.3, 31.4.1.3.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

reference
"IEEE Std 802.3, 30.3.5.1.8";
}

leaf mpcp-discovery-window-count {
type yang:counter64;

units "discovery windows";

config false;

description
"A count of discovery windows generated by the OLT.

The counter is incremented by one for each generated discovery window.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link. At the ONU, the value should be zero.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

reference
"IEEE Std 802.3, 30.3.5.1.22";
}

leaf mpcp-discovery-timeout-count {
type yang:counter64;

units "discovery timeouts";

config false;

description
"A count of the number of times a discovery timeout occurs.

This counter is incremented by one for each discovery

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processing state-machine reset resulting from timeout waiting for message arrival.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
reference
  "IEEE Std 802.3, 30.3.5.1.23";
}
```

```
leaf mpcp-register-req-out {
  type yang:counter64;
  units frames;
  config false;
```

```
description
  "A count of the number of times a REGISTER_REQ MPCP frame
  transmission occurs.
```

This counter is incremented by one for each REGISTER_REQ MPCP frame transmitted as defined in IEEE Std 802.3, Clause 64 and Clause 77.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link. At the ONU, the value should be zero.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
reference
  "IEEE Std 802.3, 30.3.5.1.12";
}
```

```
leaf mpcp-register-req-in {
  type yang:counter64;
  units frames;
  config false;
```

```
description
  "A count of the number of times a REGISTER_REQ MPCP frame
  reception occurs.
```

This counter is incremented by one for each REGISTER_REQ MPCP frame received as defined in IEEE Std 802.3, Clause 64 and Clause 77.

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This object is applicable for an OLT and an ONU. At the ONU, the value should be zero for each logical link.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
reference
  "IEEE Std 802.3, 30.3.5.1.17";
}
```

```
leaf mpcp-register-ack-out {
  type yang:counter64;
```

```
  units frames;
```

```
  config false;
```

```
  description
```

```
    "A count of the number of times a REGISTER_ACK MPCP frame transmission occurs.
```

```
    This counter is incremented by one for each REGISTER_ACK MPCP frame transmitted as defined in IEEE Std 802.3, Clause 64 and Clause 77.
```

```
    This object is applicable for an OLT and an ONU. The value should be zero for each logical link.
```

```
    Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";
```

```
reference
  "IEEE Std 802.3, 30.3.5.1.10";
}
```

```
leaf mpcp-register-ack-in {
  type yang:counter64;
```

```
  units frames;
```

```
  config false;
```

```
  description
```

```
    "A count of the number of times a REGISTER_ACK MPCP frame reception occurs.
```

```
    This counter is incremented by one for each REGISTER_ACK MPCP frame received as defined in IEEE Std 802.3, Clause 64 and Clause 77.
```

```
    This object is applicable for an OLT and an ONU. It has a distinct value for each logical link. At the ONU, the value should be zero.
```

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```

        Discontinuities of this counter can occur at
        re-initialization of the management system and at other
        times, as indicated by the value of the
        ifCounterDiscontinuityTime object.";

reference
  "IEEE Std 802.3, 30.3.5.1.15";
}

leaf mpcp-report-out {
  type yang:counter64;

  units frames;

  config false;

  description
    "A count of the number of times a REPORT MPCP frame
    transmission occurs.

    This counter is incremented by one for each REPORT MPCP frame
    transmitted as defined in IEEE Std 802.3,
    Clause 64 and Clause 77.

    This object is applicable for an OLT and an ONU. The value should
    be zero for each logical link.

    Discontinuities of this counter can occur at
    re-initialization of the management system and at other
    times, as indicated by the value of the
    ifCounterDiscontinuityTime object.";

reference
  "IEEE Std 802.3, 30.3.5.1.13";
}

leaf mpcp-report-in {
  type yang:counter64;

  units frames;

  config false;

  description
    "A count of the number of times a REPORT MPCP frame
    reception occurs.

    This counter is incremented by one for each REPORT MPCP frame
    received as defined in IEEE Std 802.3,
    Clause 64 and Clause 77.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link. At the ONU, the value should be zero.

    Discontinuities in the value of this counter can occur at
    re-initialization of the management system, and at other times as

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indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
reference
  "IEEE Std 802.3, 30.3.5.1.18";
}
```

```
leaf mpcp-gate-out {
  type yang:counter64;
```

```
  units frames;
```

```
  config false;
```

```
  description
```

```
    "A count of the number of times a GATE MPCP frame
    transmission occurs.
```

```
    This counter is incremented by one for each GATE MPCP frame
    transmitted as defined in IEEE Std 802.3,
    Clause 64 and Clause 77.
```

```
    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link. At the ONU, the value should be zero.
```

```
    Discontinuities of this counter can occur at
    re-initialization of the management system and at other
    times, as indicated by the value of the
    ifCounterDiscontinuityTime object.";
```

```
reference
  "IEEE Std 802.3, 30.3.5.1.9";
}
```

```
leaf mpcp-gate-in {
  type yang:counter64;
```

```
  units frames;
```

```
  config false;
```

```
  description
```

```
    "A count of the number of times a GATE MPCP frame reception
    occurs.
```

```
    This counter is incremented by one for each GATE MPCP frame
    received as defined in IEEE Std 802.3,
    Clause 64 and Clause 77.
```

```
    This object is applicable for an OLT and an ONU. The value should
    be zero for each logical link.
```

```
    Discontinuities of this counter can occur at
    re-initialization of the management system and at other
    times, as indicated by the value of the
    ifCounterDiscontinuityTime object.";
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```
reference
  "IEEE Std 802.3, 30.3.5.1.14";
}
```

```
leaf mpcp-register-out {
  type yang:counter64;
```

```
  units frames;
```

```
  config false;
```

```
  description
```

```
    "A count of the number of times a REGISTER MPCP frame
    transmission occurs.
```

```
    This counter is incremented by one for each REGISTER MPCP frame
    transmitted as defined in IEEE Std 802.3,
    Clause 64 and Clause 77.
```

```
    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link. At the ONU,
    the value should be zero.
```

```
    Discontinuities of this counter can occur at
    re-initialization of the management system and at other
    times, as indicated by the value of the
    ifCounterDiscontinuityTime object.";
```

```
reference
  "IEEE Std 802.3, 30.3.5.1.11";
}
```

```
leaf mpcp-register-in {
  type yang:counter64;
```

```
  units frames;
```

```
  config false;
```

```
  description
```

```
    "A count of the number of times a REGISTER MPCP frame
    reception occurs.
```

```
    This counter is incremented by one for each REGISTER MPCP frame
    received as defined in IEEE Std 802.3,
    Clause 64 and Clause 77.
```

```
    This object is applicable for an OLT and an ONU. The value should
    be zero for each logical link.
```

```
    Discontinuities of this counter can occur at
    re-initialization of the management system and at other
    times, as indicated by the value of the
    ifCounterDiscontinuityTime object.";
```

```
reference
  "IEEE Std 802.3, 30.3.5.1.16";
```

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```

}
}

container statistics-ompe {
  description
    "This container defines a set of OMP-Emulation-related
    statistics counters of an Ethernet interface implementing MPCP
    , as defined in IEEE Std 802.3, Clause 65 and Clause 76.";

  reference
    "IEEE Std 802.3.1, dot3OmpEmulationStatEntry";

  leaf ompe-pkts-in-errored-sld {
    type yang:counter64;

    units frames;

    config false;

    description
      "A count of frames received that do not contain a valid SLD
      field as defined in IEEE Std 802.3, 65.1.3.3.1 or
      76.2.6.1.3.1, as appropriate.

      This object is applicable for an OLT and an ONU. It has a distinct
      value for each logical link.

      Discontinuities in the value of this counter can occur at
      re-initialization of the management system, and at other times as
      indicated by the value of the 'discontinuity-time' leaf defined in
      the ietf-interfaces YANG module (IETF RFC 7223).";

    reference
      "IEEE Std 802.3, 30.3.7.1.3";
  }

  leaf ompe-pkts-in-errored-crc8 {
    type yang:counter64;

    units frames;

    config false;

    description
      "A count of frames received that contain a valid SLD field,
      as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1 as
      appropriate, but do not pass the CRC-8 check as defined in
      IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3 as appropriate.

      This object is applicable for an OLT and an ONU. It has a distinct
      value for each logical link.

      Discontinuities of this counter can occur at
      re-initialization of the management system and at other
      times, as indicated by the value of the
      ifCounterDiscontinuityTime object.";
  }
}

```

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```
reference
  "IEEE Std 802.3, 30.3.7.1.4";
}
```

```
leaf ompe-pkts-in-with-bad-llid {
  type yang:counter64;
```

```
  units frames;
```

```
  config false;
```

```
  description
```

"A count of frames received that contain a valid SLD field, as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1, as appropriate, and pass the CRC-8 check as defined in IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate, but are discarded due to the LLID check.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
reference
  "IEEE Std 802.3, 30.3.7.1.5";
}
```

```
leaf ompe-pkts-in-with-good-llid {
  type yang:counter64;
```

```
  units frames;
```

```
  config false;
```

```
  description
```

"A count of frames received that contain a valid SLD field, as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1 as appropriate, but do not pass the CRC-8 check as defined in IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3 as appropriate.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
reference
  "IEEE Std 802.3, 30.3.7.1.4";
}
```

```
leaf ompe-pkts-in {
  type yang:counter64;
```

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```
units frames;
```

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```
config false;
```

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```
description
```

"A count of frames received that contain a valid SLD field, as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1, as appropriate, and pass the CRC-8 check as defined in IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
reference
```

"IEEE Std 802.3, 30.3.7.1.6 (ONU) and 30.3.7.1.7 (OLT)";

```
}
```

```
leaf ompe-pkts-in-not-match-onu-llid-broadcast {
```

```
  when
```

```
    "../ompe-mode = 'onu'";
```

```
  type yang:counter64;
```

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```
  units frames;
```

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```
  config false;
```

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```
  description
```

"A count of frames received that contain a valid SLD field, as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1, as appropriate, pass the CRC-8 check, as defined in IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate, and contain the broadcast bit in the LLID and not the ONU's LLID (frame accepted) as defined in IEEE Std 802.3, Clause 65 and Clause 76, as appropriate.

This object is applicable for an ONU only.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
  reference
```

"IEEE Std 802.3.1, dot3OmpEmulationBroadcastBitNotOnuLlid";

```
}
```

```
leaf ompe-pkts-in-match-onu-llid-not-broadcast {
```

```
  when
```

```
    "../ompe-mode = 'onu'";
```

```
type yang:counter64;
```

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```
units frames;
```

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```
config false;
```

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```
description
```

"A count of frames received that contain a valid SLD field, as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1, as appropriate, pass the CRC-8 check, as defined in IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate, and contain the ONU's LLID (frame accepted) as defined in IEEE Std 802.3, Clause 65 and Clause 76, as appropriate.

This object is applicable for an ONU only.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
reference
```

```
"IEEE Std 802.3.1, dot3OmpEmulationOnuLLIDNotBroadcast";
```

```
}
```

```
leaf ompe-pkts-in-match-onu-llid-broadcast {
```

```
  when
```

```
    "../ompe-mode = 'onu'";
```

```
  type yang:counter64;
```

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```
  units frames;
```

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```
  config false;
```

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```
  description
```

"A count of frames received that contain a valid SLD field, as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1, as appropriate, pass the CRC-8 check, as defined in IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate, and contain the broadcast bit in the LLID and the ONU's LLID (frame accepted) as defined in IEEE Std 802.3, Clause 65 and Clause 76, as appropriate.

This object is applicable for an ONU only.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
  reference
```

```
    "IEEE Std 802.3.1, dot3OmpEmulationBroadcastBitPlusOnuLlid";
```

```
}
```

```
leaf ompe-pkts-in-not-match-onu-llid-not-broadcast {
```

```
  when
```

```

    ".../ompe-mode = 'onu'";
type yang:counter64;
units frames;
config false;

description
    "A count of frames received that contain a valid SLD field,
    as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1, as
    appropriate, pass the CRC-8 check, as defined in
    IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate,
    do not contain the broadcast bit in the LLID and do not contain
    the ONU's LLID (frame is NOT accepted) as defined in
    IEEE Std 802.3, Clause 65 and Clause 76, as appropriate.

    This object is applicable for an ONU only.

    Discontinuities in the value of this counter can occur at
    re-initialization of the management system, and at other times as
    indicated by the value of the 'discontinuity-time' leaf defined in
    the ietf-interfaces YANG module (IETF RFC 7223).";

reference
    "IEEE Std 802.3.1, dot3OmpEmulationNotBroadcastBitNotOnuLlid";
}
}
container thresholds-trx {
    if-feature
        trx-power-level-reporting-supported;

description
    "This container defines a set of optical transceiver
    thresholds of an Ethernet interface implementing MPCP
    as defined in IEEE Std 802.3, Clause 60 and Clause 75.";

reference
    "IEEE Std 802.3.1, dot3ExtPkgOptIfEntry";

leaf trx-power-in-low-threshold {
    if-feature
        trx-power-level-reporting-supported;

type int32;

units "0.1 dBm";

description
    "This object reflects the current setting of low alarm
    threshold for the input power into the optical receiver.
    If the value reported in 'trx-power-in' object drops below
    the value set in 'trx-power-in-low-threshold', a
    'trx-power-in-low-threshold-crossing' event is generated.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.";

```

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```
reference
  "IEEE Std 802.3.1, dot3ExtPkgOptIfLowerInputPowerThreshold";
}

leaf trx-power-in-high-threshold {
  if-feature
    trx-power-level-reporting-supported;

  type int32;

  units "0.1 dBm";

  description
    "This object reflects the current setting of high alarm
    threshold for the input power into the optical receiver. If
    the value reported in 'trx-power-in' object exceeds the
    value set in 'trx-power-in-high-threshold', a
    'trx-power-in-high-threshold-crossing' event is generated.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.";

  reference
    "IEEE Std 802.3.1, dot3ExtPkgOptIfUpperInputPowerThreshold";
}

leaf trx-power-out-low-threshold {
  if-feature
    trx-power-level-reporting-supported;

  type int32;

  units "0.1 dBm";

  description
    "This object reflects the current setting of low alarm
    threshold for the output power out of the optical
    transmitter. If the value reported in 'trx-power-out' object
    drops below the value set in 'trx-power-out-low-threshold',
    a 'trx-power-out-low-threshold-crossing' event is generated.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.";

  reference
    "IEEE Std 802.3.1, dot3ExtPkgOptIfLowerOutputPowerThreshold";
}

leaf trx-power-out-high-threshold {
  if-feature
    trx-power-level-reporting-supported;

  type int32;

  units "0.1 dBm";
```

```

description
  "This object reflects the current setting of high alarm
  threshold for the output power out of the optical
  transmitter. If the value reported in 'trx-power-out' object
  exceeds the value set in 'trx-power-out-high-threshold', a
  'trx-power-out-high-threshold-crossing' event is generated.

  This object is applicable for an OLT and an ONU. It has a distinct
  value for each logical link.";

reference
  "IEEE Std 802.3.1, dot3ExtPkgOptIfUpperOutputPowerThreshold";
}
}
container statistics-trx {
  if-feature
  trx-power-level-reporting-supported;

  description
    "This container defines a set of optical transceiver
    statistics counters of an Ethernet interface implementing MPCP
    as defined in IEEE Std 802.3, Clause 60 and Clause 75.";

  reference
    "IEEE Std 802.3.1, dot3ExtPkgOptIfEntry";

  leaf trx-power-in-signal-detect {
    type boolean;

    config false;

    description
      "This object indicates whether a valid optical signal was
      detected (when read as 'true') or not (when read as 'false')
      at the input to the optical transceiver.

      This object is applicable for an OLT and an ONU. It has a distinct
      value for each logical link.";

    reference
      "IEEE Std 802.3.1, dot3ExtPkgOptIfSignalDetect";
  }

  leaf trx-power-in {
    type int32;

    units "0.1 dBm";

    config false;

    description
      "This object reflects the value of the input power, as
      measured at the optical transceiver, expressed in units of
      0.1 dBm.

      At the ONU, the measurement is performed in a continuous
      manner.

```

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At the OLT, the measurement is performed in a burst-mode manner, for each incoming data burst.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link.";

```
reference
  "IEEE Std 802.3.1, dot3ExtPkgOptIfInputPower";
}
```

```
leaf trx-power-in-low-15-minutes-bin {
  type int32;
```

```
  units "0.1 dBm";
```

```
  config false;
```

```
  description
```

"This object reflects the lowest value of the input power during the period of the last 15 minutes, as measured at the optical transceiver, and expressed in units of 0.1 dBm.

At the ONU, the measurement is performed in a continuous manner and stored in a rolling 15-minutes' long observation bin.

At the OLT, the measurement is performed in a burst-mode manner, for each incoming data burst, and stored in a rolling 15-minutes' long observation bin.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link.";

```
reference
  "IEEE Std 802.3.1, dot3ExtPkgOptIfLowInputPower";
}
```

```
leaf trx-power-in-high-15-minutes-bin {
  type int32;
```

```
  units "0.1 dBm";
```

```
  config false;
```

```
  description
```

"This object reflects the highest value of the input power during the period of the last 15 minutes, as measured at the optical transceiver, and expressed in units of 0.1 dBm.

At the ONU, the measurement is performed in a continuous manner and stored in a rolling 15-minutes' long observation bin.

At the OLT, the measurement is performed in a burst-mode manner, for each incoming data burst, and stored in a rolling 15-minutes' long observation bin.

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```

        This object is applicable for an OLT and an ONU. It has a distinct
        value for each logical link.";

reference
  "IEEE Std 802.3.1, dot3ExtPkgOptIfHighInputPower";
}

leaf trx-power-out-signal-detect {
  type boolean;

  config false;

  description
    "This object indicates whether a valid optical signal was
    detected (when read as 'true') or not (when read as 'false')
    at the output from the optical transceiver.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.";

reference
  "IEEE Std 802.3.1, dot3ExtPkgOptIfTransmitAlarm";
}

leaf trx-power-out {
  type int32;

  units "0.1 dBm";

  config false;

  description
    "This object reflects the value of the output power, as
    measured at the optical transceiver, expressed in units of
    0.1 dBm.

    At the ONU, the measurement is performed in a burst-mode manner
    for each outgoing data burst.

    At the OLT, the measurement is performed in a continuous manner.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.";

reference
  "IEEE Std 802.3.1, dot3ExtPkgOptIfOutputPower";
}

leaf trx-power-out-low-15-minutes-bin {
  type int32;

  units "0.1 dBm";

  config false;

  description

```

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"This object reflects the lowest value of the output power during the period of the last 15 minutes, as measured at the optical transceiver, and expressed in units of 0.1 dBm.

At the ONU, the measurement is performed in a burst-mode manner and stored in a rolling 15-minutes' long observation bin.

At the OLT, the measurement is performed in a continuous manner, for each incoming data burst, and stored in a rolling 15-minutes' long observation bin.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link.";

```
reference
  "IEEE Std 802.3.1, dot3ExtPkgOptIfLowOutputPower";
}

leaf trx-power-out-high-15-minutes-bin {
  type int32;

  units "0.1 dBm";

  config false;

  description
    "This object reflects the highest value of the output power
    during the period of the last 15 minutes, as measured at the
    optical transceiver, and expressed in units of 0.1 dBm.

    At the ONU, the measurement is performed in a burst-mode
    manner and stored in a rolling 15-minutes' long observation
    bin.

    At the OLT, the measurement is performed in a continuous
    manner, for each incoming data burst, and stored in a
    rolling 15-minutes' long observation bin.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.";

  reference
    "IEEE Std 802.3.1, dot3ExtPkgOptIfHighOutputPower";
}

container statistics-pon-fec {
  when
    "(../fec-capability = 'supported') and
    (../fec-mode = 'enabled-Tx-Rx')";

  if-feature
  fec-supported;

  config false;
}
```

```
description
  "This container defines a set of FEC-related statistics
  counters of an Ethernet interface implementing MPCP, as
  defined in IEEE Std 802.3, Clause 65 and Clause 76.";

reference
  "IEEE Std 802.3.1, dot3OmpEmulationStatEntry";

leaf fec-code-group-violations {
  type yang:counter64;

  units code-group;

  config false;

  description
    "For 1G-EPON, it is a count of the number of times an
    invalid codeword is received, other than the /V/
    code-group. The /V/ denotes a special 8b10b codeword of
    the IEEE Std 802.3 Clause 36 1000 Mb/s PCS layer, reused
    in 1G-EPON.

    For 10G-EPON, it is a count of the number of times an
    invalid codeword is received.

    This object is applicable for an OLT and an ONU. At the
    OLT, it has a distinct value for each logical link.

    Discontinuities in the value of this counter can occur at
    re-initialization of the management system, and at other times as
    indicated by the value of the 'discontinuity-time' leaf defined in
    the ietf-interfaces YANG module (IETF RFC 7223).";

  reference
    "IEEE Std 802.3, 30.5.1.1.14";
}

leaf fec-buffer-head-coding-violations {
  type yang:counter64;

  units code-group;

  config false;

  description
    "For 1000BASE-PX PHY, this object represents the count of
    the number of invalid code-group received directly from the
    link.

    For 10GBASE-PR or 10/1GBASE-PRX PHYs, this object is always
    set to zero.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.

    Discontinuities in the value of this counter can occur at
    re-initialization of the management system, and at other times as
```

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indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
reference
  "IEEE Std 802.3.1, dot3EponFecBufferHeadCodingViolation ";
}
```

```
leaf fec-code-word-corrected-errors {
  type yang:counter64;
  units code-group;
  config false;
```

```
description
  "For 1000BASE-PX, 10GBASE-PR or 10/1GBASE-PRX PHYs, it is a
  count of corrected FEC blocks.

  This counter increments by one for each received FEC block
  that contained detected errors and was corrected by the FEC
  function in the PHY.

  This object is applicable for an OLT and an ONU. It has a distinct
  value for each logical link.

  Discontinuities in the value of this counter can occur at
  re-initialization of the management system, and at other times as
  indicated by the value of the 'discontinuity-time' leaf defined in
  the ietf-interfaces YANG module (IETF RFC 7223).";
```

```
reference
  "IEEE Std 802.3, 30.5.1.1.17";
}
```

```
leaf fec-code-word-uncorrected-errors {
  type yang:counter64;
  units code-group;
  config false;
```

```
description
  "For 1000BASE-PX, 10GBASE-PR or 10/1GBASE-PRX PHYs, it is a
  count of uncorrectable FEC blocks.

  This counter increments by one for each received FEC block
  that contained detected errors and was not corrected by the
  FEC function in the PHY.

  This object is applicable for an OLT and an ONU. It has a distinct
  value for each logical link.

  Discontinuities in the value of this counter can occur at
  re-initialization of the management system, and at other times as
  indicated by the value of the 'discontinuity-time' leaf defined in
  the ietf-interfaces YANG module (IETF RFC 7223).";
```

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reported 'Queue N report' sets.

For each Queue Set, the 'Report bitmap' field defines which upstream transmission queues are present in the REPORT MPCPDU. Although the REPORT MPCPDU can report current occupation for up to 8 upstream transmission queues in a single REPORT MPCPDU, the actual number is flexible. The 'mpcp-queue-group' grouping has a variable size that is limited by value of 'mpcp-maximum-queue-count-per-report' object, allowing ONUs report the occupancy of fewer upstream transmission queues, as needed.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link and every queue.
At the ONU, it has a distinct value for every queue.";

```
reference
  "IEEE Std 802.3.1, dot3ExtPkgQueueEntry";
```

```
leaf mpcp-queue-index {
  type uint8 {
    range "0 .. 7" {
      description
        "This object indicates the identity (index) of a queue in the
        ONU. It can have a value between 0 and 7, limited by the value
        stored in the 'mpcp-maximum-queue-count-per-report' object.";

      reference
        "See 'mpcp-maximum-queue-count-per-report' object";
    }
  }
}
```

```
description
  "An object represents the index of an upstream transmission
  queue storing subscriber packets. The size (occupancy) of
  the upstream transmission queue identified by this object is
  then reported within REPORT MPCPDU, defined in
  IEEE Std 802.3, Clause 64 and Clause 77.
```

This object indicates the identity (index) of a queue in the ONU. It can have a value between 0 and 7, limited by the value stored in the 'mpcp-maximum-queue-count-per-report' object.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link and each queue.
At the ONU, it has a distinct value for each queue.";

```
reference
  "IEEE Std 802.3.1, dot3QueueIndex";
}
```

```
leaf mpcp-queue-threshold-count {
  type uint8 {
    range "0 .. 7" {
      description
        "This object indicates the identity (index) of a queue in the
        ONU. It can have a value between 0 and 7, limited by the value
```

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```

        stored in the 'mpcp-maximum-queue-count-per-report' object.";
    reference
        "See 'mpcp-queue-threshold-count-max' object";
    }
}

description
    "This object reflects the number of reporting thresholds for
    the specific upstream transmission queue, reflected in the
    REPORT MPCPDU, as defined in IEEE Std 802.3,
    Clause 64 and Clause 77.

    Each 'Queue set' provides information for the specific
    upstream transmission queue occupancy of frames below the
    matching reporting threshold.

    A read of this object reflects the number of reporting
    thresholds for the specific upstream transmission queue.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link and each queue.
    At the ONU, it has a distinct value for each queue.";

reference
    "IEEE Std 802.3.1, dot3ExtPkgObjectReportNumThreshold";
}

leaf mpcp-queue-threshold-count-max {
    type uint8 {
        range "0 .. 7" {
            description
                "This object can have a value between 0 and 7.";
        }
    }
}

description
    "This object reflects the maximum number of reporting
    thresholds for the specific upstream transmission queue,
    reflected in the REPORT MPCPDU, as defined in
    IEEE Std 802.3, Clause 64 and Clause 77.

    A read of this object reflects the maximum number of
    reporting thresholds for the specific upstream transmission
    queue.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link and each queue.
    At the ONU, it has a distinct value for each queue.";

reference
    "IEEE Std 802.3.1, dot3ExtPkgObjectReportMaximumNumThreshold";
}

list mpcp-queue-thresholds {
    when
        "../mpcp-queue-threshold-count > 0";
}

```

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```
key mpcp-queue-set-index;
```

```
max-elements 7;
```

```
description
```

```
"An instance of this object for each value of  
'mpcp-queue-index' is created when a new logical link is  
registered and deleted when the logical link is  
deregistered.
```

```
All instances of this object in the ONU associated with the  
given logical link are then mapped in to a REPORT MPCPDU,  
when generated.
```

```
+-----+  
| Destination Address |  
+-----+  
| Source Address     |  
+-----+  
| Length/Type        |  
+-----+  
| OpCode             |  
+-----+  
| TimeStamp          |  
+-----+  
| Number of Queue Sets |  
+-----+  
| Report bitmap      | -|  
+-----+  
| Queue 0 report     | | repeated for  
+-----+  
| Queue 1 report     | | every  
+-----+  
| Queue 2 report     | | Queue Set  
+-----+  
| Queue 3 report     | |  
+-----+  
| Queue 4 report     | |  
+-----+  
| Queue 5 report     | |  
+-----+  
| Queue 6 report     | |  
+-----+  
| Queue 7 report     | |  
+-----+  
| Pad/reserved       | -|  
+-----+  
| FCS                 |  
+-----+
```

```
The 'Queue N report' field reports the current occupancy of  
each upstream transmission queue associated with the given  
logical link.
```

```
The 'Number of Queue Sets' field defines the number of  
reported 'Queue N report' sets.
```


For each Queue Set, the 'Report bitmap' field defines which upstream transmission queues are present in the REPORT MPCPDU. Although the REPORT MPCPDU can report current occupation for up to 8 upstream transmission queues in a single REPORT MPCPDU, the actual number is flexible.

The 'mcp-queue-group' grouping has a variable size that is limited by value of 'mcp-maximum-queue-count-per-report' object, allowing ONUs to report the occupancy of fewer upstream transmission queues, as needed.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link and every queue. At the ONU, it has a distinct value for every queue.";

```
reference
  "IEEE Std 802.3.1, dot3ExtPkgQueueSetsEntry";

leaf mcp-queue-set-index {
  type uint8 {
    range
      "0 .. 7" {
        description
          "This object indicates the identity (index) of a queue in
          the ONU. It can have a value between 0 and 7, limited by
          the value stored in the
          'mcp-maximum-queue-count-per-report' object.";

        reference
          "See 'mcp-maximum-queue-count-per-report' object";
      }
  }

  description
    "This object represents the index of the Queue Set for the
    'mcp-queue-set-group' grouping. The size (occupancy) of
    the upstream transmission queues belonging to the given
    Queue Set is then reported within REPORT MPCPDU, defined
    in IEEE Std 802.3, Clause 64 and Clause 77.

    This object can have a value between 0 and 7, limited by
    the value stored in the 'mcp-queue-threshold-count-max'
    object.";

  reference
    "IEEE Std 802.3.1, dot3QueueSetIndex";
}
```

```
leaf mcp-queue-set-threshold {
  type uint64;

  units "TQ";

  default "0";

  description
```

"This object defines the value of a reporting threshold for each Queue Set stored in REPORT MPCPDU defined in IEEE Std 802.3, Clause 64 and Clause 77.

The number of Queue Sets for each upstream transmission queue is defined in the 'mcp-queue-threshold-count' object.

Within REPORT MPCPDU, each Queue Set provides information on the current upstream transmission queue occupancy for frames below the matching threshold.

The value stored in this object is expressed in the units of Time quanta (TQ), where 1 TQ = 16 ns.

A read of this object provides the current threshold value for the specific upstream transmission queue.

This object is applicable for an OLT and an ONU. At the OLT, it has a distinct value for each logical link, each queue, and each Queue Set.

At the ONU, it has a distinct value for each queue and each Queue Set.";

```
reference
  "IEEE Std 802.3.1, dot3ExtPkgObjectReportThreshold";
}
```

```
leaf mcp-queue-pkts-in {
  type yang:counter64;
```

```
  config false;
```

```
  description
```

"This object reflects the number of frame reception events into the corresponding upstream transmission queue. This object is incremented by one for each frame received, when it is input into the associated queue.

The queue index matches the queue number in REPORT MPCPDU, as defined in IEEE Std 802.3, Clause 64 and Clause 77.

This object is applicable for an OLT and an ONU. It has a distinct value for each logical link and each queue. At the ONU, it has a distinct value for each queue.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 7223).";

```
reference
  "IEEE Std 802.3.1, dot3ExtPkgStatRxFramesQueue";
}
```

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```

leaf mpcp-queue-pkts-out {
  when
    "../..mpcp-mode = 'onu'";

  type yang:counter64;

  config false;

  description
    "This object reflects the number of frame transmission
    events from the corresponding upstream transmission queue.
    This object is incremented by one for each frame transmitted
    , when it is output from the associated queue.

    The queue index matches the queue number in REPORT MPCPDU,
    as defined in IEEE Std 802.3, Clause 64 and Clause 77.

    This object is applicable for an ONU only. At the ONU, it
    has a distinct value for each queue.

    Discontinuities in the value of this counter can occur at
    re-initialization of the management system, and at other times as
    indicated by the value of the 'discontinuity-time' leaf defined in
    the ietf-interfaces YANG module (IETF RFC 7223).";

  reference
    "IEEE Std 802.3.1, dot3ExtPkgStatTxFramesQueue";
}

leaf mpcp-queue-pkts-drop {
  when
    "../..mpcp-mode = 'onu'";

  type yang:counter64;

  config false;

  description
    "This object reflects the number of frame drop events from
    the corresponding upstream transmission queue. This object
    is incremented by one for each frame dropped in the
    associated queue.

    The queue index matches the queue number in REPORT MPCPDU,
    as defined in IEEE Std 802.3, Clause 64 and Clause 77.

    This object is applicable for an ONU only. At the ONU, it
    has a distinct value for each queue.

    Discontinuities in the value of this counter can occur at
    re-initialization of the management system, and at other times as
    indicated by the value of the 'discontinuity-time' leaf defined in
    the ietf-interfaces YANG module (IETF RFC 7223).";

  reference
    "IEEE Std 802.3.1, dot3ExtPkgStatDroppedFramesQueue";
}

```

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```

}

leaf fec-capability {
  if-feature
  fec-supported;

  type fec-capability;

  config false;

  description
    "This object is used to identify whether the given interface
    is cable of supporting FEC or not.";
}

leaf mpcp-mode {
  type mpcp-mode;

  config false;

  description
    "This object is used to identify the operational state of the
    MultiPoint MAC Control sublayer as defined in
    IEEE Std 802.3, Clause 64 and Clause 77.

    Reading 'olt' for an OLT (controller) mode and 'onu' for an ONU
    (client) mode.

    This object is used to identify the operational mode for the
    MPCP objects.

    This object is applicable for an OLT, with the same value for
    all logical links, and for an ONU.";

  reference
    "IEEE Std 802.3, 30.3.5.1.3";
}

leaf mpcp-sync-time {
  type uint64;

  units "TQ (16ns)";

  config false;

  description
    "This object reports the 'sync lock time' of the OLT
    receiver in units of Time Quanta (TQ; 1 TQ = 16 ns; see
    IEEE Std 802.3, Clause 64 and Clause 77).

    The value returned shall be equal to [sync lock time ns]/16,
    rounded up to the nearest TQ. If this value exceeds
    4,294,967,295 TQ, the value 4,294,967,295 TQ shall be returned.

    This object is applicable for an OLT, with distinct values for
    all logical links, and for an ONU.";
}

```

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```
reference
  "IEEE Std 802.3, 64.3.3.2";
}
```

```
leaf mpcp-logical-link-id {
  type mpcp-supported;
```

```
  config false;
```

```
  description
```

```
    "This object is used to identify the operational state of the
    MultiPoint MAC Control sublayer as defined in
    IEEE Std 802.3, Clause 64 and Clause 77.
```

```
    Reading 'olt' for an OLT (controller) mode and 'onu' for an ONU
    (client) mode.
```

```
    This object is used to identify the operational mode for the
    MPCP objects.
```

```
    This object is applicable for an OLT, with the same value for
    all logical links, and for an ONU.";
```

```
reference
  "IEEE Std 802.3, 30.3.5.1.3";
}
```

```
leaf mpcp-remote-mac-address {
  type yang:mac-address;
```

```
  config false;
```

```
  description
```

```
    "This object identifies the source_address parameter of the
    last MPCPDUs passed to the MAC Control. This value is updated
    on reception of a valid frame with:
```

```
    1) a destination Field equal to the reserved multicast address
    for MAC Control as specified in IEEE Std 802.3, Annex 31A;
```

```
    2) the lengthOrType field value equal to the reserved Type for
    MAC Control as specified in IEEE Std 802.3, Annex 31A;
```

```
    3) an MPCP Control opcode value equal to the subtype reserved for
    MPCP as specified in IEEE Std 802.3, Annex 31A.
```

```
    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.
```

```
    The value reflects the MAC address of the remote entity and
    therefore the OLT holds a value for each LLID, which is
    the MAC address of the ONU.
```

```
    The ONU has a single value that is the OLT MAC address.";
```

```
reference
  "IEEE Std 802.3, 30.3.5.1.5";
```

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```
}  
  
leaf mpcp-logical-link-state {  
  type mpcp-logical-link-state;  
  config false;  
  description  
    "This object identifies the registration state of the  
    MultiPoint MAC Control sublayer as defined in  
    IEEE Std 802.3, Clause 64 and Clause 77.  
  
    When this object has the enumeration 'unregistered', the  
    interface is unregistered and may be used for registering  
    a link partner.  
  
    When this object has the enumeration 'registering',  
    the interface is in the process of registering a link-partner.  
  
    When this object has the enumeration 'registered', the  
    interface has an established link-partner.  
  
    This object is applicable for an OLT and an ONU. It has a distinct  
    value for each logical link.";  
  reference  
    "IEEE Std 802.3, 30.3.5.1.6";  
}
```

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```
leaf mpcp-elapsed-time-out {  
  type uint64;  
  units "TQ (16ns)";  
  config false;  
  description  
    "This object reports the interval from the last MPCP frame  
    transmission in increments of Time Quanta (TQ; 1 TQ = 16 ns;  
    see IEEE Std 802.3, Clause 64 and Clause 77).  
  
    The value returned shall be equal to [interval from last MPCP  
    frame transmission on this Ethernet interface, expressed  
    in ns]/16. If this value exceeds 4,294,967,295 TQ, the value  
    4,294,967,295 TQ shall be returned.  
  
    This object is applicable for an OLT and an ONU. It has a distinct  
    value for each logical link.";  
  reference  
    "IEEE Std 802.3, 30.3.5.1.19";  
}
```

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```
leaf mpcp-elapsed-time-in {  
  type uint64;  
  units "TQ (16ns)";
```

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```
config false;

description
  "This object reports the interval from the last MPCP frame
  reception in increments of Time Quanta (TQ; 1 TQ = 16 ns; see
  IEEE Std 802.3, Clause 64 and Clause 77).

  The value returned shall be equal to [interval from last MPCP
  frame reception on this Ethernet interface, expressed in
  ns]/16. If this value exceeds 4,294,967,295 TQ, the value
  4,294,967,295 TQ shall be returned.

  This object is applicable for an OLT and an ONU. It has a distinct
  value for each logical link.";

reference
  "IEEE Std 802.3, 30.3.5.1.20";
}
```

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```
leaf mpcp-round-trip-time {
  type uint16;

  units "TQ (16ns)";

  config false;

  description
    "This object reports the MPCP round trip time in increments
    of Time Quanta (TQ; 1 TQ = 16 ns; see IEEE Std 802.3,
    Clause 64 and Clause 77).

    The value returned shall be equal to [round trip time in ns]/16.
    If this value exceeds 65,535 TQ, the value 65,535 TQ shall be
    returned.

    This object is applicable for an OLT. It has a distinct value for
    each logical link.";

  reference
    "IEEE Std 802.3, 30.3.5.1.21";
}
```

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```
leaf mpcp-maximum-grant-count {
  type uint8;

  config false;

  description
    "This object reports the maximum number of grants that an
    ONU can store for handling. The maximum number of grants that
    an ONU can store for handling has a range of 0 to 255.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link. At the OLT, the value should be zero.";

  reference
```

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```
    "IEEE Std 802.3, 30.3.5.1.24";
}

leaf mpcp-logical-link-count {
  type mpcp-llid-count;

  units LLID;

  config false;

  description
    "This object reflects the number of logical links registered
    on the OLT / ONU. The LLID field, as defined in the
    IEEE Std 802.3, Clause 65 and Clause 76, is a 2-byte register
    (15-bit field and a broadcast bit) limiting the number of
    logical links to 32,768.

    This object is initialized to the value of 0 when the
    OLT / ONU is powered up.

    This object is applicable for an OLT and an ONU. It has the same
    value for all logical links.";

  reference
    "IEEE Std 802.3.1, dot3ExtPkgObjectNumberOfLLIDs";
}

leaf mpcp-maximum-queue-count-per-report {
  type mpcp-maximum-queue-count-per-report;

  config false;

  description
    "This object reflects the maximum number of queues (0-7) that can be
    accepted by the OLT in a single REPORT MPCPDU, as defined in
    IEEE Std 802.3, Clause 64 and Clause 77.

    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.";

  reference
    "IEEE Std 802.3.1, dot3ExtPkgObjectReportMaximumNumQueues";
}

leaf ompe-mode {
  type ompe-mode;

  config false;

  description
    "This object indicates the mode of operation of the
    Reconciliation Sublayer for Point-to-Point Emulation (see
    IEEE Std 802.3, 65.1 or 76.2 as appropriate).

    The value of 'unknown' is assigned in initialization; true
    state or type is not yet known.
```

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The value of 'olt' is assigned when the sublayer is operating in OLT mode.

The value of 'onu' is assigned when the sublayer is operating in ONU mode.

This object is applicable for an OLT and an ONU. It has the same value for each logical link.";

```
reference
  "IEEE Std 802.3, 30.3.7.1.2";
}
```

```
leaf trx-data-reliable {
  if-feature
  trx-power-level-reporting-supported;
```

```
  type boolean;
```

```
  config false;
```

```
  description
```

```
    "This object indicates whether data contained in individual
    counters in 'statistics-trx' container are reliable (when read
    as 'true') or not (when read as 'false')."
```

```
    This object is applicable for an OLT and an ONU. It has a distinct
    value for each logical link.";
```

```
  reference
    "IEEE Std 802.3.1, dot3ExtPkgOptIfSuspectedFlag";
}
```

```
}
```

```
}
```

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