

OpenCable™ Specifications

Home Networking

OpenCable Home Networking MIB Specification

OC-SP-MIB-HN-I05-120112

ISSUED

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Key to Document Status Codes

- Work in Progress** An incomplete document, designed to guide discussion and generate feedback that may include several alternative requirements for consideration.
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1 SCOPE

1.1 Introduction and Purpose

This specification defines the MIB requirements for OpenCable Host 2.x Home Networking Extension. The MIB, as defined here, will reside on the OpenCable Host device.

1.2 Requirements

Throughout this document, the words that are used to define the significance of particular requirements are capitalized. These words are:

"SHALL"	This word means that the item is an absolute requirement of this specification.
"SHALL NOT"	This phrase means that the item is an absolute prohibition of this specification.
"SHOULD"	This word means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications should be understood and the case carefully weighed before choosing a different course.
"SHOULD NOT"	This phrase means that there may exist valid reasons in particular circumstances when the listed behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
"MAY"	This word means that this item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because it enhances the product, for example; another vendor may omit the same item.

2 REFERENCES

2.1 Normative References

In order to claim compliance with this specification, it is necessary to conform to the following standards and other works as indicated, in addition to the other requirements of this specification. Notwithstanding, intellectual property rights may be required to use or implement such normative references.

All references are subject to revision, and parties to agreement based on this specification are encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific:

- For a specific reference, subsequent revisions do not apply.
- For a non-specific, non-Bundle reference, the latest version applies.
- For non-specific CableLabs references that are part of the [OC-BUNDLE], the versions mandated in a particular Bundle apply.

[HOST]	OpenCable Host Device 2.1 Core Functional Requirements, OC-SP-HOST2.1, Cable Television Laboratories, Inc. Referenced in [OC-BUNDLE].
[HOST-HN]	OpenCable Host Home Networking Extension 2.0, OC-SP-HOST-HN2.0, Cable Television Laboratories, Inc. Referenced in [OC-BUNDLE].
[OC-BUNDLE]	OpenCable Bundle Requirements, OC-SP-BUNDLE. See Section 2.2.1 to acquire this specification.
[RFC 2863]	IETF RFC 2863, K. McCloghrie and F. Kastholz, The Interfaces Group MIB, June 2000.
[RFC 4293]	IETF RFC 4293, Management Information Base for the Internet Protocol (IP). S. Routhier, Ed. April 2006. (Obsoletes RFC2011, RFC2465, RFC2466)
[RSD PROT]	OpenCable Home Networking – Reserved Services Domain Protocols Specification, OC-SP-RSD-PROT-I01-080828, August 28, 2008, Cable Television Laboratories, Inc.
[RSD TECH]	Reserved Services Domain Technology 1.0 Specification, OC-SP-RSD-TECH-I01-080630, June 30, 2008, Cable Television Laboratories, Inc.

2.2 Reference Acquisition

- Cable Television Laboratories, Inc., 858 Coal Creek Circle, Louisville, CO 80027; Phone +1-303-661-9100; Fax +1-303-661-9199; <http://www.cablelabs.com>
- Internet Engineering Task Force, <http://www.ietf.org>

2.2.1 OpenCable Bundle Requirements

The OpenCable Bundle Requirements specification [OC-BUNDLE] indicates the set of CableLabs specifications required for the implementation of the OpenCable Bundle. The version number of [OC-BUNDLE] corresponds to the release number of the OpenCable Bundle that it describes. One or more versions of [OC-BUNDLE] reference this specification. Current and past versions of [OC-BUNDLE] may be obtained from CableLabs at <http://www.cablelabs.com/opencable/specifications>.

3 TERMS AND DEFINITIONS

This specification uses the following term:

OpenCable Bundle The OpenCable Bundle defines a set of specifications required to build a specific version of an OpenCable device. See [OC-BUNDLE].

4 ABBREVIATIONS AND ACRONYMS

This specification does not define any new abbreviations.

5 OC-STB-HN-MIB

```

OC-HOME-NETWORK-MIB DEFINITIONS ::= BEGIN

IMPORTS
    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF                -- RFC 2580
    Integer32,
    Unsigned32,
    Counter32,
    OBJECT-TYPE,
    MODULE-IDENTITY
        FROM SNMPv2-SMI                -- RFC 2578
    TruthValue,
    RowStatus,
    MacAddress,
    TEXTUAL-CONVENTION
        FROM SNMPv2-TC                -- RFC 2579
    SnmpAdminString
        FROM SNMP-FRAMEWORK-MIB       -- RFC 3411
    InetAddressType,
    InetPortNumber,
    InetAddress
        FROM INET-ADDRESS-MIB         -- RFC 4001
    clabProjOpenCable
        FROM CLAB-DEF-MIB
    ifIndex
        FROM IF-MIB
    ;

ocHnMibModule MODULE-IDENTITY
    LAST-UPDATED "201009100000Z"      -- September 10, 2010
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Postal: Cable Television Laboratories, Inc.
         858 Coal Creek Circle
         Louisville, Colorado 80027-9750
         U.S.A.
         Phone:   +1 303-661-9100
         Fax:     +1 303-661-9199
         E-mail:  mibs@cablelabs.com"
    DESCRIPTION
        "This MIB module contains the objects for the
         management of an OpenCable Home Network. The
         MIB resides on the OpenCable Host Device if the
         Home Network Extension is implemented."
    REVISION "201009100000Z"          -- September 10, 2010
    DESCRIPTION
        "Added static PQoS configuration parameter and
         associated table."
    REVISION "201005070000Z"          -- May 7, 2010
    DESCRIPTION
        "Added device properties group."
    REVISION "200909210000Z"          -- September 21, 2009
    DESCRIPTION
        "This version is being published as part of the
         OpenCable Home Networking MIB specification I01."
    ::= { clabProjOpenCable 2 }

Tenths ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d-1"
    STATUS      current
    DESCRIPTION
        "This data type represents generic decimal units

```

```

        in Tenths. For example, a value of 5.1 will be
        represented as 51."
SYNTAX      Integer32

PowerUnit ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
        "Represents a well-known RSD power unit of
        measurement."
    SYNTAX      INTEGER {
                    other(1),
                    dBmV(2),
                    dBm(3),
                    mW(4)
                }

--
-- Node definitions
--

ocHnNotifications OBJECT IDENTIFIER ::= { ocHnMibModule 1 }
ocHnMibObjects     OBJECT IDENTIFIER ::= { ocHnMibModule 2 }

ocHnHomeNetStatus OBJECT IDENTIFIER ::= { ocHnMibObjects 1 }

--
-- Reserved Services Domain Status
--

ocHnRsdManagerStatus OBJECT IDENTIFIER ::= { ocHnHomeNetStatus 1 }

ocHnRsdManagerImportanceNumber OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Configurable importance number for the RSDManager in
        this device. Used to determine the preferred RSDManager
        on the home network."
    ::= { ocHnRsdManagerStatus 1 }

ocHnRsdManagerPreferredStatus OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "True indicates this is the preferred RSD Manager
        on the home network."
    ::= { ocHnRsdManagerStatus 2 }

--
-- UPnP Services Status information
--

ocHnDevUpnpServiceTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF OcHnDevUpnpServiceEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table defines each service offered
        by this device. One row should be created
        for each supported service."
    ::= { ocHnHomeNetStatus 2 }

ocHnDevUpnpServiceEntry OBJECT-TYPE
    SYNTAX      OcHnDevUpnpServiceEntry
    MAX-ACCESS  not-accessible

```

```

STATUS      current
DESCRIPTION
    "Each entry defines a UPnP service."
INDEX { ocHnDevUpnpServiceIndex }
 ::= { ocHnDevUpnpServiceTable 1 }

OcHnDevUpnpServiceEntry ::=
SEQUENCE {
    ocHnDevUpnpServiceIndex
        Unsigned32,
    ocHnDevUpnpServiceType
        INTEGER,
    ocHnDevUpnpServiceAvailable
        TruthValue
}

ocHnDevUpnpServiceIndex OBJECT-TYPE
SYNTAX      Unsigned32 (1..4294967295)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Table Index."
 ::= { ocHnDevUpnpServiceEntry 1 }

ocHnDevUpnpServiceType OBJECT-TYPE
SYNTAX      INTEGER {
                cds(1),
                srs(2),
                qosManager(3),
                qosDevice(4),
                qosPolicyHolder(5),
                avt(6),
                cm(7),
                rcs(8)
            }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Service options currently available."
 ::= { ocHnDevUpnpServiceEntry 2 }

ocHnDevUpnpServiceAvailable OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Service is available (true) or unavailable (false)."
 ::= { ocHnDevUpnpServiceEntry 3 }

--
-- Supported Channels Table
--

ocHnDevSupportedChannelTable OBJECT-TYPE
SYNTAX      SEQUENCE OF OcHnDevSupportedChannelEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This table identifies the RSD Technology channels
     for each interface supported by a particular RSD node.
     This table is required for RF-based technologies."
 ::= { ocHnHomeNetStatus 3 }

ocHnDevSupportedChannelEntry OBJECT-TYPE
SYNTAX      OcHnDevSupportedChannelEntry
MAX-ACCESS  not-accessible
STATUS      current

```

```

DESCRIPTION
    "Each entry defines an offered channel by interface."
INDEX { ifIndex, ocHnDevSupportedChannelIndex }
 ::= { ocHnDevSupportedChannelTable 1 }

OcHnDevSupportedChannelEntry ::=
SEQUENCE {
    ocHnDevSupportedChannelIndex
        Unsigned32,
    ocHnDevSupportedChannelLastOperatingFreq
        TruthValue,
    ocHnDevSupportedChannelInUse
        TruthValue,
    ocHnDevSupportedChannelFrequency
        Unsigned32,
    ocHnDevSupportedChannelEligible
        TruthValue
}

ocHnDevSupportedChannelIndex OBJECT-TYPE
SYNTAX      Unsigned32 (1..4294967295)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Index for each channel supported by the
    interface indicated by the ifIndex."
 ::= { ocHnDevSupportedChannelEntry 1 }

ocHnDevSupportedChannelLastOperatingFreq OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Indicates this channel/frequency
    was tuned when last in the LinkUp state.
    The value is persistent through reboots."
 ::= { ocHnDevSupportedChannelEntry 2 }

ocHnDevSupportedChannelInUse OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "This channel is currently being used by
    this interface."
 ::= { ocHnDevSupportedChannelEntry 3 }

ocHnDevSupportedChannelFrequency OBJECT-TYPE
SYNTAX      Unsigned32 (0..2000000000)
UNITS       "hertz"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Channel center frequency. This channel must be available
    for selection as the operating frequency."
 ::= { ocHnDevSupportedChannelEntry 4 }

ocHnDevSupportedChannelEligible OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "This channel is currently eligible for use."
 ::= { ocHnDevSupportedChannelEntry 5 }

--
-- Device Properties: Lists various UPnP Device properties

```

```

--
ocHnDevProperties OBJECT IDENTIFIER ::= { ocHnHomeNetStatus 4 }

ocHnDevPropertiesFriendlyName OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Value from the <friendlyName> element in the OCAP Root
        Device Description of the device as defined in Annex A
        of [HNP2.0]."
    ::= { ocHnDevProperties 1 }

--
-- Rotameter configuration options
--

ocHnROConfiguration OBJECT IDENTIFIER ::= { ocHnMibObjects 2 }

ocHnRotameterConfigTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF OcHnRotameterConfigEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains the basic rotameter observation
        configuration parameters. Each row defines a set of
        parameters to configure a rotameter observation. The
        device may obtain per stream statistics, if requested,
        using one or more rows in the
        PerStreamRotameterConfigTable."
    ::= { ocHnROConfiguration 1 }

ocHnRotameterConfigEntry OBJECT-TYPE
    SYNTAX      OcHnRotameterConfigEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each entry represents set of configuration parameters for
        one observation."
    INDEX { ocHnRotameterConfigIndex }
    ::= { ocHnRotameterConfigTable 1 }

OcHnRotameterConfigEntry ::=
    SEQUENCE {
        ocHnRotameterConfigIndex
            Unsigned32,
        ocHnRotameterConfigRowStatus
            RowStatus,
        ocHnRotameterConfigObservationActive
            TruthValue,
        ocHnRotameterConfigPeriod
            Unsigned32,
        ocHnRotameterConfigMonitorResolutionPeriod
            Unsigned32,
        ocHnRotameterConfigQosSegmentId
            OCTET STRING,
        ocHnRotameterConfigEndpointMacAddress
            MacAddress
    }

ocHnRotameterConfigIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..4294967295)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Table Index."

```

```

 ::= { ocHnRotameterConfigEntry 1 }

ocHnRotameterConfigRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Controls and reflects the status of rows in this
        Table (see RowStatus textual convention). There
        is no restriction on changing any of the associated
        columns for this row while this object is set
        to active (i.e., columnar objects can be modified
        when the row is active). An active row does not
        equate to an active observation; it implies only that
        the rotameter observation can be initiated when
        ocHnRotameterConfigObservationActive is set to 'True'."
 ::= { ocHnRotameterConfigEntry 2}

ocHnRotameterConfigObservationActive OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Setting this value to 'True' causes the rotameter to be
        configured and activated per the specified columns in
        the row. Only one row observation can be active at any
        given time."
 ::= { ocHnRotameterConfigEntry 3 }

ocHnRotameterConfigPeriod OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This integer field specifies the duration in seconds
        over which the Rotameter Observation is performed.
        This value must be less than or equal to the Monitoring
        Resolution Period. The default is 0 and indicates no
        monitoring."
 ::= { ocHnRotameterConfigEntry 4 }

ocHnRotameterConfigMonitorResolutionPeriod OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This integer field specifies, in seconds, how often a
        Rotameter observation is initiated. The default value
        of 0 indicates no monitoring in progress."
 ::= { ocHnRotameterConfigEntry 5 }

ocHnRotameterConfigQosSegmentId OBJECT-TYPE
    SYNTAX      OCTET STRING
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This uniquely identifies a network segment of a shared
        Media technology. This parameter needs
        to be configured to obtain traffic statistics for a
        specific QosSegment and for a specific traffic stream
        identified by a combination of Layer2StreamId and a
        QosSegmentId. The default value of 0 indicates no
        QosSegment is specified."
 ::= { ocHnRotameterConfigEntry 6 }

ocHnRotameterConfigEndpointMacAddress OBJECT-TYPE
    SYNTAX      MacAddress

```

```

MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This is an optional field. If value of all zeros is
    provided, the device reports information about the traffic
    for the entire QoSSegment identified by QoSSegmentId.
    If non-zero value is provided, this device provides
    information about traffic between its interface, identified
    by the ocHnQoSROStatsMacAddress field and the device,
    identified by this parameter. If no value is specified,
    the device either reports traffic to/from itself or between
    itself and other devices on the network."
 ::= { ocHnRotameterConfigEntry 7 }

--
-- Rotameter augmentation table
-- Use in conjunction with the OcHnRotameterConfigTable if
-- stream-based observations are required
--

ocHnPerStreamRotameterConfigTable OBJECT-TYPE
SYNTAX SEQUENCE OF OcHnPerStreamRotameterConfigEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "This table optionally augments the rotameter observation
    configuration parameters. Each row defines a set of
    parameters to configure a per-stream rotameter observation.
    Care must be taken when specifying both
    ocHnPerStreamRotameterConfigTrafficHandle and
    ocHnPerStreamRotameterConfigLayer2StreamId parameters to
    ensure that they both identify the same traffic stream."
 ::= { ocHnROConfiguration 2 }

ocHnPerStreamRotameterConfigEntry OBJECT-TYPE
SYNTAX OcHnPerStreamRotameterConfigEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "Each entry represents one stream traffic descriptor."
INDEX { ocHnPerStreamRotameterConfigIndex, ocHnRotameterConfigIndex }
 ::= { ocHnPerStreamRotameterConfigTable 1 }

OcHnPerStreamRotameterConfigEntry ::=
SEQUENCE {
    ocHnPerStreamRotameterConfigIndex
        Unsigned32,
    ocHnPerStreamRotameterConfigRowStatus
        RowStatus,
    ocHnPerStreamRotameterConfigLayer2StreamId
        OCTET STRING,
    ocHnPerStreamRotameterConfigTrafficHandle
        OCTET STRING,
    ocHnPerStreamRotameterConfigObservationActive
        TruthValue
}

ocHnPerStreamRotameterConfigIndex OBJECT-TYPE
SYNTAX Unsigned32 (1..4294967295)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "Table Index."
 ::= { ocHnPerStreamRotameterConfigEntry 1 }

ocHnPerStreamRotameterConfigRowStatus OBJECT-TYPE
SYNTAX RowStatus

```

```

MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    "Controls and reflects the status of rows in this
    table (see RowStatus textual convention). There
    is no restriction on changing any of the associated
    columns for this row while this object is set
    to active (i.e., columnar objects can be modified
    when the row is active)."
 ::= { ocHnPerStreamRotameterConfigEntry 2}

ocHnPerStreamRotameterConfigLayer2StreamId OBJECT-TYPE
SYNTAX        OCTET STRING (SIZE (64) )
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    "This identifies a unique traffic stream flowing through a
    QoS segment identified by a QosSegmentId. A Control Point
    optionally specifies this field if it is interested in
    obtaining information for a specific traffic stream
    identified by a Layer2StreamId on the specified
    QosSegmentId. The default value of '0x00' indicates
    no ocHnRotameterLayer2StreamId specified."
 ::= { ocHnPerStreamRotameterConfigEntry 3 }

ocHnPerStreamRotameterConfigTrafficHandle OBJECT-TYPE
SYNTAX        OCTET STRING
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    "This identifies a unique UPnP traffic stream flowing
    through a device that supports a QosDevice service.
    A Control Point optionally specifies this field if it is
    interested in obtaining information for a specific UPnP
    traffic stream. The default value 'null' indicates
    no handle has been specified."
 ::= { ocHnPerStreamRotameterConfigEntry 4 }

ocHnPerStreamRotameterConfigObservationActive OBJECT-TYPE
SYNTAX        TruthValue
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    "Setting this value to 'True' causes the rotameter to be
    configured per the specified columns in the row. Multiple
    rows in this table may be active concurrently to allow for
    multiple streams to be included in a single observation."
 ::= { ocHnPerStreamRotameterConfigEntry 5 }

ocHnQos OBJECT IDENTIFIER ::= { ocHnMibObjects 3 }

--
-- QoS stream, policy, and traffic configuration
-- for RSD Technologies only.

--
-- Dynamic configuration parameters
--

ocHnQosTrafficInfo OBJECT IDENTIFIER ::= { ocHnQos 1 }

ocHnQosStreamsInfoCollectionTrigger OBJECT-TYPE
SYNTAX        TruthValue
MAX-ACCESS    read-write
STATUS        current
DESCRIPTION
    "Setting to true(1) causes this device

```

```

        to populate the ocHnQoSTrafficDescTable with traffic
        descriptor information for each known stream established
        using UPnP QoS."
 ::= { ocHnQoSTrafficInfo 1 }

--
-- QoS traffic descriptor table. Populated only when triggered
-- by setting the ocHnQoSStreamsInfoCollectionTrigger to true(1).
--

ocHnQoSTrafficDescTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF OcHnQoSTrafficDescEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains the traffic descriptor information
        for each traffic stream established using UPnP QoS. It is
        populated only when directed to do so via the MIB object
        ocHnQoSStreamsInfoCollectionTrigger. Each invocation of
        the collection trigger will cause a refresh
        of these values."
 ::= { ocHnQoSTrafficInfo 2 }

ocHnQoSTrafficDescEntry OBJECT-TYPE
    SYNTAX      OcHnQoSTrafficDescEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each entry represents one stream traffic descriptor."
    INDEX { ocHnQoSTrafficDescIndex }
 ::= { ocHnQoSTrafficDescTable 1 }

OcHnQoSTrafficDescEntry ::=
    SEQUENCE {
        ocHnQoSTrafficDescIndex
            Unsigned32,
        ocHnQoSTrafficHandle
            OCTET STRING,
        ocHnQoSTrafficQDMacAddress
            MacAddress,
        ocHnQoSTrafficNetworkAddressType
            InetAddressType,
        ocHnQoSTrafficSourceAddress
            InetAddress,
        ocHnQoSTrafficSourcePort
            InetPortNumber,
        ocHnQoSTrafficDestinationAddress
            InetAddress,
        ocHnQoSTrafficDestinationPort
            InetPortNumber,
        ocHnQoSTrafficIpProtocol
            Unsigned32,
        ocHnQoSTrafficV3TrafficIdSourceUuid
            OCTET STRING,
        ocHnQoSTrafficV3TrafficIdDestinationUuid
            OCTET STRING,
        ocHnQoSTrafficMediaServerConnectionId
            Integer32,
        ocHnQoSTrafficMediaRendererConnectionId
            Integer32,
        ocHnQoSTrafficLeaseTime
            Unsigned32,
        ocHnQoSTrafficCritical
            INTEGER,
        ocHnQoSTrafficUserName
            SnmpAdminString,
        ocHnQoSTrafficVendorApplicationName
    }

```

```

        OCTET STRING,
        ocHnQoSTrafficPortName
        OCTET STRING,
        ocHnQoSTrafficServiceProviderServiceName
        OCTET STRING,
        ocHnQoSTrafficCpName
        SnmpAdminString
    }

ocHnQoSTrafficDescIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..4294967295)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Table Index."
    ::= { ocHnQoSTrafficDescEntry 1 }

ocHnQoSTrafficHandle OBJECT-TYPE
    SYNTAX      OCTET STRING
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The unique identifier associated with a particular
        instance of TrafficDescriptor (i.e., a particular
        traffic stream). This object serves as a secondary
        index into the related TSPEC table in which the active
        TSPEC is denoted."
    ::= { ocHnQoSTrafficDescEntry 2 }

ocHnQoSTrafficQDMacAddress OBJECT-TYPE
    SYNTAX      MacAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Identifies a QoS Device in which the QoS
        Stream/flow was registered."
    ::= { ocHnQoSTrafficDescEntry 3 }

ocHnQoSTrafficNetworkAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "IP Address type for source and destination IP
        addresses in the traffic descriptors.
        Textual convention will report IPv4(1) or
        IPv6(2)."
    ::= { ocHnQoSTrafficDescEntry 4 }

ocHnQoSTrafficSourceAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Source IP address in traffic descriptor. A value
        of 0.0.0.0 (::: for IPv6) indicates 'do not care'. This must
        be consistent with the object
        ocHnQoSTrafficNetworkAddressType within a conceptual row."
    ::= { ocHnQoSTrafficDescEntry 5 }

ocHnQoSTrafficSourcePort OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Source protocol port number in traffic descriptor.
        A value of 0 represents a 'Don't Care', i.e., the

```

```

        condition where a Control Point wants to set up
        QoS for all traffic streams irrespective of the
        SourcePort."
 ::= { ocHnQoSTrafficDescEntry 6 }

ocHnQoSTrafficDestinationAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Destination IP address in traffic descriptor. A value
        of 0.0.0.0 (:: for IPv6) indicates 'do not care'. This
        must be consistent with the object
        ocHnQoSTrafficNetworkAddressType."
 ::= { ocHnQoSTrafficDescEntry 7 }

ocHnQoSTrafficDestinationPort OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Destination protocol port number in traffic descriptor.
        A value of 0 represents a 'Don't Care', i.e., the
        condition where a Control Point wants to set up
        QoS for all traffic streams irrespective of the
        DestinationPort."
 ::= { ocHnQoSTrafficDescEntry 8 }

ocHnQoSTrafficIpProtocol OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "IP protocol number in traffic descriptor. A value
        of '0' represents a 'don't care' and the CP wants to set up
        QoS for traffic streams irrespective of the IpProtocol."
 ::= { ocHnQoSTrafficDescEntry 9 }

ocHnQoSTrafficV3TrafficIdSourceUuid OBJECT-TYPE
    SYNTAX      OCTET STRING
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Contains the UDN of the UPnP Device at the source. The
        UUID consists of the UDN of the device, including the
        prefix 'uuid:'."
 ::= { ocHnQoSTrafficDescEntry 10 }

ocHnQoSTrafficV3TrafficIdDestinationUuid OBJECT-TYPE
    SYNTAX      OCTET STRING
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Contains the UDN of the UPnP Device at the destination.
        The UUID consists of the UDN of the device, including
        the prefix 'uuid:'."
 ::= { ocHnQoSTrafficDescEntry 11 }

ocHnQoSTrafficMediaServerConnectionId OBJECT-TYPE
    SYNTAX      Integer32 (-1..65534)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Identifies the traffic stream established by
        the UPnP-AV Control Point at the DMS for which
        QoS is requested."
 ::= { ocHnQoSTrafficDescEntry 12 }

```

```

ocHnQoSTrafficMediaRendererConnectionId OBJECT-TYPE
    SYNTAX      Integer32 (-1..65534)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Identifies the traffic stream established by the
        UPnP-AV Control Point at the DMR for which
        QoS is requested."
    ::= { ocHnQoSTrafficDescEntry 13 }

ocHnQoSTrafficLeaseTime OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object contains the lease time associated
        with a particular traffic stream. When not specified
        (which MUST only occur for prioritized streams), it
        indicates an indefinite lease, i.e., the
        TrafficDescriptor will remain active until it is
        explicitly removed or the QoSDevice is rebooted. The value
        reported in this object represents the remaining
        lease time. A NULL must be returned if this object
        is not populated."
    ::= { ocHnQoSTrafficDescEntry 14 }

ocHnQoSTrafficCritical OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The value expresses the control point's belief on whether
        this traffic stream is critical. Streams for entertainment
        are not critical traffic streams. Examples of critical
        traffic streams are emergency alerts, emergency calls, etc.
        A NULL must be returned if this object is not populated."
    ::= { ocHnQoSTrafficDescEntry 15 }

ocHnQoSTrafficUserName OBJECT-TYPE
    SYNTAX      SnmpAdminString (SIZE (0..64))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Contains a string associated with the user who requested
        a particular traffic stream. This field identifies the name
        of the user initiating the UPnP-QoS Action."
    ::= { ocHnQoSTrafficDescEntry 16 }

ocHnQoSTrafficVendorApplicationName OBJECT-TYPE
    SYNTAX      OCTET STRING
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The value contains a single URI string associated with an
        application. This field identifies the name of the
        application initiating the UPnP-QoS Action. For
        applications specified by vendors, the value of this
        field MUST begin with 'urn:1', followed by an ICANN domain
        name owned by the vendor, followed by
        ':application:', followed by an application name.
        A NULL must be returned if this object is not populated."
    ::= { ocHnQoSTrafficDescEntry 17 }

ocHnQoSTrafficPortName OBJECT-TYPE
    SYNTAX      OCTET STRING

```

```

MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The value contains a single URI string associated
    with the fixed port used by an application for its protocol
    set-up. This field, if present, shall identify the port
    number used by the application. The value of this field
    MUST begin with 'urn:', followed by an ICANN domain name
    owned by the vendor, followed by ':port:', followed by the
    port name. A NULL must be returned
    if this object is not populated."
 ::= { ocHnQoSTrafficDescEntry 18 }

ocHnQoSTrafficServiceProviderServiceName OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The value contains a single URI string associated
    with a service offered by a service provider. This field
    identifies the name of the service offered by a service
    provider. For services provided by service providers, the
    value of this field MUST begin with 'urn:', followed by an
    ICANN domain name owned by a service provider, followed
    by ':service:', followed by a service name.
    A NULL must be returned if this object is not populated."
 ::= { ocHnQoSTrafficDescEntry 19 }

ocHnQoSTrafficCpName OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The value is a string associated with the Control Point
    Requesting QoS for the traffic stream. This field
    identifies the name of the Control Point initiating the
    UPnP-QoS Action. A NULL must be returned if this object
    is not populated."
 ::= { ocHnQoSTrafficDescEntry 20 }

--
-- TSpec table. Populated only when triggered
-- by setting the ocHnQoSStreamsInfoCollectionTrigger to true(1).
--

ocHnQoSTable OBJECT-TYPE
SYNTAX SEQUENCE OF OcHnQoSTableEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "This table contains the Traffic Specification (TSPEC)
    list. Each row represents a set of parameters that define
    the characteristics of the traffic stream. The TSPEC defines
    the resource requirements for carrying the traffic stream."
 ::= { ocHnQoSStreamsInfo 3 }

ocHnQoSTableEntry OBJECT-TYPE
SYNTAX OcHnQoSTableEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "Each entry represents one stream traffic descriptor."
INDEX { ocHnQoSTableIndex, ocHnQoSStreamHandle }
 ::= { ocHnQoSTable 1 }

OcHnQoSTableEntry ::=
SEQUENCE {

```

```

ocHnQoSKeySpecTableIndex
    Unsigned32,
ocHnQoSTspec
    Unsigned32,
ocHnQoSActiveTspec
    TruthValue,
ocHnQoSTspecTrafficClass
    INTEGER,
ocHnQoSTspecReqQoSType
    INTEGER,
ocHnQoSTspecDataRate
    Unsigned32,
ocHnQoSTspecPeakDataRate
    Unsigned32,
ocHnQoSTspecMaxBurstSize
    Unsigned32,
ocHnQoSTspecMaxPacketSize
    Unsigned32,
ocHnQoSTspecE2EMaxDelayHigh
    Unsigned32,
ocHnQoSTspecE2EMaxJitter
    Unsigned32
}

```

```

ocHnQoSTspecTableIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..4294967295)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Table Index. The unique TrafficHandle serves as a
        Secondary index into this table. This allows the
        Network manager to view all the TSPECs associated with
        a given TrafficHandle."
    ::= { ocHnQoSEntry 1 }

```

```

ocHnQoSIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The value of Tspec reflects the order of preference.
        TspecIndex values need not be
        consecutive numbers."
    ::= { ocHnQoSEntry 2 }

```

```

ocHnQoSActiveTspec OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Only one Tspec can be active for a specific TrafficHandle.
        'True' signifies the entry is active. 'False' implies the
        Tspec can potentially be utilized."
    ::= { ocHnQoSEntry 3 }

```

```

ocHnQoSTrafficClass OBJECT-TYPE
    SYNTAX      INTEGER {
        other(1),
        networkControl(2),
        streamingControl(3),
        voice(4),
        av(5),
        data(6),
        audio(7),
        image(8),
        background(9),
        gaming(10)
    }

```

```

    }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Contains the traffic class associated with
        the traffic stream."
    ::= { ocHnQoSKeySpecEntry 4 }

ocHnQoSKeySpecReqQoSType OBJECT-TYPE
    SYNTAX INTEGER {
        prioritized(1),
        hybrid(2),
        parameterized(3)
    }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Specifies the type of Quality of Service
        that is requested with this traffic descriptor."
    ::= { ocHnQoSKeySpecEntry 5 }

ocHnQoSKeySpecDataRate OBJECT-TYPE
    SYNTAX Unsigned32
    UNITS "octets/sec"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This value intends to characterize the
        long term data rate."
    ::= { ocHnQoSKeySpecEntry 6 }

ocHnQoSKeySpecPeakDataRate OBJECT-TYPE
    SYNTAX Unsigned32
    UNITS "octets/sec"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Defines an upper bound on the data rate at which this
        traffic stream needs to be served in order to serve the
        traffic stream within time. If not provided, the default
        is the ocHnQoSTrafficTspecDataRate."
    ::= { ocHnQoSKeySpecEntry 7 }

ocHnQoSKeySpecMaxBurstSize OBJECT-TYPE
    SYNTAX Unsigned32
    UNITS "octets/sec"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Maximum burst size. A value of zero indicates
        a constant bit rate with no bursts."
    ::= { ocHnQoSKeySpecEntry 8 }

ocHnQoSKeySpecMaxPacketSize OBJECT-TYPE
    SYNTAX Unsigned32
    UNITS "bytes"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Conveys the information about packetization of traffic
        streams by an application. The packet size includes the
        application data and an approximation of the overhead
        of all protocol headers at and above the IP layer.
        The default is 1500 if not specified."
    ::= { ocHnQoSKeySpecEntry 9 }

ocHnQoSSpecE2EMaxDelayHigh OBJECT-TYPE

```

```

SYNTAX      Unsigned32
UNITS       "microseconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Specifies the desired upper bound of the End-to-End
    Delay of individual packets belonging to the traffic
    stream."
 ::= { ocHnQoSspecEntry 10 }

ocHnQoSspecE2EMaxJitter OBJECT-TYPE
SYNTAX      Unsigned32
UNITS       "microseconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Specifies an UPPER bound to the End-to-End Jitter."
 ::= { ocHnQoSspecEntry 11 }

--
-- Policy table - One row is created
-- for each TLV 56 (RSD Configuration TLV)
--

ocHnQoSPolicyTable OBJECT-TYPE
SYNTAX      SEQUENCE OF OcHnQoSPolicyEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This table contains the operator and user-created
    policies for the management of QoS for applications."
 ::= { ocHnQoS 2 }

ocHnQoSPolicyEntry OBJECT-TYPE
SYNTAX      OcHnQoSPolicyEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Each entry represents one QoS policy."
INDEX { ocHnQoSPolicyRuleIdentifier }
 ::= { ocHnQoSPolicyTable 1 }

OcHnQoSPolicyEntry ::=
SEQUENCE {
    ocHnQoSPolicyRuleIdentifier
        Unsigned32,
    ocHnQoSPolicyRowStatus
        RowStatus,
    ocHnQoSPolicyIpAddressType
        InetAddressType,
    ocHnQoSPolicySourceAddressUpLimit
        InetAddress,
    ocHnQoSPolicySourceAddressLowLimit
        InetAddress,
    ocHnQoSPolicySourcePortUpLimit
        InetPortNumber,
    ocHnQoSPolicySourcePortLowLimit
        InetPortNumber,
    ocHnQoSPolicyDestinationAddressUpLimit
        InetAddress,
    ocHnQoSPolicyDestinationAddressLowLimit
        InetAddress,
    ocHnQoSPolicyDestinationPortUpLimit
        InetPortNumber,
    ocHnQoSPolicyDestinationPortLowLimit
        InetPortNumber,
    ocHnQoSPolicyIpProtocolUpLimit

```

```

    Unsigned32,
    ocHnQosPolicyIpProtocolLowLimit
    Unsigned32,
    ocHnQosPolicyTrafficClass
    INTEGER,
    ocHnQosPolicyPeakDataRateUpLimit
    Unsigned32,
    ocHnQosPolicyPeakDataRateLowLimit
    Unsigned32,
    ocHnQosPolicyMeanDataRateUpLimit
    Unsigned32,
    ocHnQosPolicyMeanDataRateLowLimit
    Unsigned32,
    ocHnQosPolicyMaxBurstSizeUpLimit
    Unsigned32,
    ocHnQosPolicyMaxBurstSizeLowLimit
    Unsigned32,
    ocHnQosPolicyE2EMaxDelayHighLimit
    Unsigned32,
    ocHnQosPolicyE2EMaxDelayLowLimit
    Unsigned32,
    ocHnQosPolicyBoundaryAddressType
    InetAddressType,
    ocHnQosPolicyBoundarySourceAddressUpLimit
    InetAddress,
    ocHnQosPolicyBoundarySourceAddressLowLimit
    InetAddress,
    ocHnQosPolicyBoundaryDestinationAddressUpLimit
    InetAddress,
    ocHnQosPolicyBoundaryDestinationAddressLowLimit
    InetAddress,
    ocHnQosPolicyUserName
    SnmpAdminString,
    ocHnQosPolicyVendorApplicationName
    SnmpAdminString,
    ocHnQosPolicyPortName
    SnmpAdminString,
    ocHnQosPolicyServiceProviderServiceName
    SnmpAdminString,
    ocHnQosPolicyCriticalFlag
    TruthValue,
    ocHnQosPolicyRequestedQosType
    INTEGER,
    ocHnQosPolicyStartTime
    Unsigned32,
    ocHnQosPolicyEndTime
    Unsigned32,
    ocHnQosPolicyTrafficLeaseTimeUpValue
    Unsigned32,
    ocHnQosPolicyTrafficLeaseTimeLowValue
    Unsigned32,
    ocHnQosPolicyRuleType
    INTEGER,
    ocHnQosPolicyRulePriority
    Unsigned32,
    ocHnQosPolicyTrafficImportanceNumber
    Unsigned32,
    ocHnQosPolicyUserImportanceNumber
    Unsigned32
}

```

```

ocHnQosPolicyRuleIdentifier OBJECT-TYPE
    SYNTAX      Unsigned32 (0..65535)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Unique identifier for each policy."

```

```

 ::= { ocHnQosPolicyEntry 1 }

ocHnQosPolicyRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Controls and reflects the status of rows in this
         Table (see RowStatus textual convention). There
         is no restriction on changing any of the associated
         columns for this row while this object is set
         to active (i.e., columnar objects can be modified
         when the row is active)."
```

```

 ::= { ocHnQosPolicyEntry 2 }

ocHnQosPolicyIpAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "IPv4 or IPv6. Textual convention will
         report IPv4(1) or IPv6(2) This Type applies
         to all IP addresses in this row."
```

```

 ::= { ocHnQosPolicyEntry 3 }

ocHnQosPolicySourceAddressUpLimit OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The upper limit for source of traffic stream(s)
         for which a QoS Policy rule is applied. Default
         value for this field is of all ones
         (255.255.255.255 for IPv4 and
         ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff: for IPv6),
         and it represents that no upper limit is specified for
         the Source IP address."
```

```

 ::= { ocHnQosPolicyEntry 4 }

ocHnQosPolicySourceAddressLowLimit OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Identifies the lower limit for source of traffic stream(s)
         for which a QoS Policy rule is applied. A default value for
         this field is all zeros (0.0.0.0 for IPv4 and :: for IPv6),
         and it represents that no lower limit is specified for the
         Source IP Address."
```

```

 ::= { ocHnQosPolicyEntry 5 }

ocHnQosPolicySourcePortUpLimit OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the upper limit for port of source of traffic
         stream(s) for which a QoS Policy rule is applied. A default
         value for this field is 65535, and it represents that no
         upper limit is specified for the Source Port."
```

```

 ::= { ocHnQosPolicyEntry 6 }

ocHnQosPolicySourcePortLowLimit OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION

```

```

        "Specifies the lower limit for port of source of traffic
        stream(s) for which a QoS Policy rule is applied. A default
        value for this field is 0, and it represents that no
        lower limit is specified for the Source Port."
 ::= { ocHnQosPolicyEntry 7 }

ocHnQosPolicyDestinationAddressUpLimit OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The upper limit for destination of traffic stream(s)
        for which a QoS Policy rule is applied. Default
        value for this field is of all ones
        (255.255.255.255 for IPv4 and
        ffff: ffff: ffff: ffff: ffff: ffff: ffff: ffff: for IPv6),
        and it represents that no upper limit is specified for
        the destination IP address."
 ::= { ocHnQosPolicyEntry 8 }

ocHnQosPolicyDestinationAddressLowLimit OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Identifies the lower limit for destination of traffic
        stream(s) for which a QoS Policy rule is applied. A default
        value for this field is all zeros (0.0.0.0 for IPv4
        and :: for IPv6), and it represents that no lower limit
        is specified for the destination IP Address."
 ::= { ocHnQosPolicyEntry 9 }

ocHnQosPolicyDestinationPortUpLimit OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the upper limit for port of destination of
        traffic stream(s) for which a QoS Policy rule is applied.
        A default value for this field is 65535, and it represents
        that no upper limit is specified for the destination Port."
 ::= { ocHnQosPolicyEntry 10 }

ocHnQosPolicyDestinationPortLowLimit OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the lower limit for port of destination of
        traffic stream(s) for which a QoS Policy rule is applied.
        A default value for this field is 0, and it represents that
        no lower limit is specified for the destination Port."
 ::= { ocHnQosPolicyEntry 11 }

ocHnQosPolicyIpProtocolUpLimit OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies an IANA-assigned upper limit for IP protocol
        number of traffic stream(s) for which a QoS Policy rule is
        applied. A default value for this field is 255, and it
        represents that no upper limit is specified for the
        IP Protocol."
 ::= { ocHnQosPolicyEntry 12 }

ocHnQosPolicyIpProtocolLowLimit OBJECT-TYPE

```

```

SYNTAX      Unsigned32 (0..255)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Specifies an IANA-assigned lower limit for IP protocol
    number of traffic stream(s) for which a QoS Policy rule is
    applied. A default value for this field is 0, and it
    represents that no lower limit is specified for the
    IP Protocol."
 ::= { ocHnQosPolicyEntry 13 }

ocHnQosPolicyTrafficClass OBJECT-TYPE
SYNTAX      INTEGER {
                networkControl(0),
                streamingControl(1),
                voice(2),
                av(3),
                data(4),
                audio(5),
                image(6),
                gaming(7),
                other(8),
                background(9)
            }
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Specifies the traffic class associated with traffic
    stream(s) for which a QoS Policy rule is applied."
 ::= { ocHnQosPolicyEntry 14 }

ocHnQosPolicyPeakDataRateUpLimit OBJECT-TYPE
SYNTAX      Unsigned32
UNITS       "octets/sec"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Specifies the upper limit for PeakDataRate of traffic
    stream(s) for which a QoS Policy rule is applied."
 ::= { ocHnQosPolicyEntry 15 }

ocHnQosPolicyPeakDataRateLowLimit OBJECT-TYPE
SYNTAX      Unsigned32
UNITS       "octets/sec"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Specifies the lower limit for PeakDataRate of traffic
    stream(s) for which a QoS Policy rule is applied."
 ::= { ocHnQosPolicyEntry 16 }

ocHnQosPolicyMeanDataRateUpLimit OBJECT-TYPE
SYNTAX      Unsigned32
UNITS       "octets/sec"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Specifies the upper limit for MeanDataRate of traffic
    stream(s) for which a QoS Policy rule is applied."
 ::= { ocHnQosPolicyEntry 17 }

ocHnQosPolicyMeanDataRateLowLimit OBJECT-TYPE
SYNTAX      Unsigned32
UNITS       "octets/sec"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION

```

```

        "Specifies the lower limit for MeanDataRate of traffic
        stream(s) for which a QoS Policy rule is applied."
 ::= { ocHnQosPolicyEntry 18 }

ocHnQosPolicyMaxBurstSizeUpLimit OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "octets/sec"
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the upper limit for MaxBurstSize of traffic
        stream(s) for which a QoS Policy rule is applied."
 ::= { ocHnQosPolicyEntry 19 }

ocHnQosPolicyMaxBurstSizeLowLimit OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "octets/sec"
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the lower limit for MaxBurstSize of traffic
        stream(s) for which a QoS Policy rule is applied."
 ::= { ocHnQosPolicyEntry 20 }

ocHnQosPolicyE2EMaxDelayHighLimit OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "microseconds"
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the upper limit of E2EMaxDelayHigh
        (End-to-end delay) parameter for traffic stream(s) for
        which a QoS Policy rule is applied."
 ::= { ocHnQosPolicyEntry 21 }

ocHnQosPolicyE2EMaxDelayLowLimit
    OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "microseconds"
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the lower limit of E2EMaxDelayLow
        (End-to-end delay) parameter for
        traffic stream(s) for which a QoS Policy rule is applied."
 ::= { ocHnQosPolicyEntry 22 }

ocHnQosPolicyBoundaryAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "IPv4 or IPv6. Textual convention will
        report IPv4(1) or IPv6(2). This Type applies
        to all IP addresses in this row."
 ::= { ocHnQosPolicyEntry 23 }

ocHnQosPolicyBoundarySourceAddressUpLimit OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The upper limit for source of traffic stream(s)
        for which a QoS Policy rule is applied. Default
        value for this field is of all ones
        (255.255.255.255 for IPv4 and
        ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff: for IPv6),

```

```

        and it represents that no upper limit is specified for
        the Source IP address. Address format must be consistent
        with ocHnQosPolicyBoundaryAddressType."
 ::= { ocHnQosPolicyEntry 24 }

ocHnQosPolicyBoundarySourceAddressLowLimit OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "The lower limit for source of traffic stream(s)
    for which a QoS Policy rule is applied. A default value for
    this field is all zeros (0.0.0.0 for IPv4 and :: for IPv6),
    which represents that no lower limit is specified. Address
    format must be consistent with
    ocHnQosPolicyBoundaryAddressType."
 ::= { ocHnQosPolicyEntry 25 }

ocHnQosPolicyBoundaryDestinationAddressUpLimit OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "The upper limit for destination of traffic stream(s)
    for which a QoS Policy rule is applied. Default
    value for this field is of all ones
    (255.255.255.255 for IPv4 and
    ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff for IPv6),
    and it represents that no upper limit is specified for
    the Destination IP address. Address format must be
    consistent with ocHnQosPolicyBoundaryAddressType."
 ::= { ocHnQosPolicyEntry 26 }

ocHnQosPolicyBoundaryDestinationAddressLowLimit OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "The lower limit for destination of traffic stream(s)
    for which a QoS Policy rule is applied. A default value for
    this field is all zeros (0.0.0.0 for IPv4 and :: for IPv6),
    which represents that no lower limit is specified for the
    Destination IP address. Address format must be consistent
    with ocHnQosPolicyBoundaryAddressType."
 ::= { ocHnQosPolicyEntry 27 }

ocHnQosPolicyUserName OBJECT-TYPE
SYNTAX      SnmpAdminString
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "This field identifies the name of the user initiating the
    UPnP-QoS action. The field is <= 64 UTF-8 characters.
    At present, the semantics for this field are not defined.
    A null should be returned if no value exists."
 ::= { ocHnQosPolicyEntry 28 }

ocHnQosPolicyVendorApplicationName OBJECT-TYPE
SYNTAX      SnmpAdminString
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "This field identifies the name of the application
    initiating the UPnP-QoS Action. A NULL should be returned
    if no value exists."
 ::= { ocHnQosPolicyEntry 29 }

```

```

ocHnQosPolicyPortName OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This value, if present, contains a single URI string
        associated with the fixed port used by an application
        for its protocol set-up. A NULL should be returned if
        no value exists."
    ::= { ocHnQosPolicyEntry 30 }

ocHnQosPolicyServiceProviderServiceName OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This object contains a single URI string associated with
        the name of the service offered by a service provider.
        A NULL should be returned if no value exists."
    ::= { ocHnQosPolicyEntry 31 }

ocHnQosPolicyCriticalFlag OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the Critical Flag for traffic stream(s) for
        which a QoS Policy rule is applied. This flag can be set
        to get a higher UIN to protect a stream from preemption
        or to be able to always get admitted. Streams for
        entertainment are not critical traffic streams. This flag
        can be used for services like EAS messages, E-911 calls,
        voice calls, etc. The default value is False(2)."
    ::= { ocHnQosPolicyEntry 32 }

ocHnQosPolicyRequestedQosType OBJECT-TYPE
    SYNTAX      INTEGER {
                fullyPrioritized(1),
                hybrid(2),
                fullyParameterized(3)
                }
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the Requested QoS Type for traffic stream(s) for
        which a QoS Policy rule is applied. If supplied, it SHALL
        contain a non-negative integer value. It is used to
        indicate the type of Quality of Service that is requested
        for a traffic stream. The default value is 1."
    ::= { ocHnQosPolicyEntry 33 }

ocHnQosPolicyStartTime OBJECT-TYPE
    SYNTAX      Unsigned32 (0..604800)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the starting Time Of Day (Day/Time)for a QoS
        Policy Rule. Time is specified in seconds and ranges
        from 0 - 604800 (to cover 7 days of week). Time 0 is Sunday
        12 midnight. If not specified, this object returns a NULL."
    ::= { ocHnQosPolicyEntry 34 }

ocHnQosPolicyEndTime OBJECT-TYPE
    SYNTAX      Unsigned32 (0..604800)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION

```

```

        "Specifies the ending Time Of Day (Day/Time)for a QoS
        Policy Rule. Time is specified in seconds and ranges
        from 0 - 604800 (to cover 7 days of week). Time 0 is
        Sunday 12 midnight. If not specified, this object
        returns a NULL."
 ::= { ocHnQosPolicyEntry 35 }

ocHnQosPolicyTrafficLeaseTimeUpValue OBJECT-TYPE
    SYNTAX      Unsigned32 (0..604800)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the upper limit for lease time for reservation
        of QoS resources associated with traffic stream(s) for
        which a QoS Policy rule is applied. If not specified,
        this object returns a NULL."
 ::= { ocHnQosPolicyEntry 36 }

ocHnQosPolicyTrafficLeaseTimeLowValue OBJECT-TYPE
    SYNTAX      Unsigned32 (0..604800)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the lower limit for lease time for reservation
        of QoS resources associated with traffic stream(s) for
        which a QoS Policy rule is applied. If not specified, this
        object returns a NULL."
 ::= { ocHnQosPolicyEntry 37 }

ocHnQosPolicyRuleType OBJECT-TYPE
    SYNTAX      INTEGER {
                    operatorOnly(0),
                    homeUser(1),
                    operatorForHomeUser(2),
                    other(3)
                }
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Identifies the type of a QoS Policy rule based
        on who configures the rule and for what purpose."
 ::= { ocHnQosPolicyEntry 38 }

ocHnQosPolicyRulePriority OBJECT-TYPE
    SYNTAX      Unsigned32 (0..65535)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the priority for a QoS Policy rule. QoS policy
        rules are processed according to their Rule Priority value,
        the highest to the lowest."
 ::= { ocHnQosPolicyEntry 39 }

ocHnQosPolicyTrafficImportanceNumber OBJECT-TYPE
    SYNTAX      Unsigned32 (1..7)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies traffic priority to be utilized for tagging
        packets belonging to traffic stream(s) for which this
        QoS Policy Rule is applied."
 ::= { ocHnQosPolicyEntry 40 }

ocHnQosPolicyUserImportanceNumber OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    MAX-ACCESS  read-create
    STATUS      current

```

```

DESCRIPTION
    "Specifies the User Importance Number for traffic stream(s)
    for which this QoS Policy Rule is applied. It determines
    the stream importance from users' perspective. It is used
    for admission control and preemption purposes."
 ::= { ocHnQosPolicyEntry 41 }

--
-- QoS Statistics for RSD Technologies only
--

ocHnQosROStatsTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF OcHnQosROStatsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table reports the common values carried in each
        Rotameter Observation collected. It also provides the
        anchor index for the related tables (e.g., parameterized
        and prioritized stream statistics)."
    ::= { ocHnQos 3 }

ocHnQosROStatsEntry OBJECT-TYPE
    SYNTAX      OcHnQosROStatsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "One entry for each observation."
    INDEX { ocHnQosROStatsIndex }
    ::= { ocHnQosROStatsTable 1 }

OcHnQosROStatsEntry ::=
    SEQUENCE {
        ocHnQosROStatsIndex
            Unsigned32,
        ocHnQosROStatsIdentifier
            Unsigned32,
        ocHnQosROStatsMacAddress
            MacAddress,
        ocHnQosROStatsObservationMacAddress
            MacAddress,
        ocHnQosROStatsQosSegmentId
            OCTET STRING,
        ocHnQosROStatsTotalTrafficBytes
            Counter32,
        ocHnQosROStatsTotalParameterizedBytes
            Counter32,
        ocHnQosROStatsTotalParameterizedPackets
            Counter32,
        ocHnQosROStatsTotalParameterizedPacketsDropped
            Counter32,
        ocHnQosROStatsReportingDateAndTime
            SnmpAdminString,
        ocHnQosROStatsObservationPeriod
            Unsigned32,
        ocHnQosROStatsMonitorResolutionPeriod
            Unsigned32
    }

ocHnQosROStatsIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..4294967295)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Table Index. This will serve as an external index
        to related statistics tables."
    ::= { ocHnQosROStatsEntry 1 }

```

```

ocHnQosROStatsIdentifier OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Unique identifier for each observation on the device."
    ::= { ocHnQosROStatsEntry 2 }

ocHnQosROStatsMacAddress OBJECT-TYPE
    SYNTAX      MacAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "MAC Address of the interface on a device that is
        collecting these statistics."
    ::= { ocHnQosROStatsEntry 3 }

ocHnQosROStatsObservationMacAddress OBJECT-TYPE
    SYNTAX      MacAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This is the MAC address of an interface on a QosDevice
        Service at which the Rotameter observation information
        is provided. If it is the same address as
        ocHnQosROStatsMacAddress parameter, then the Rotameter
        observation is for all traffic to/from the interface
        identified by the ocHnQosROStatsMacAddress field on this
        device. If the address is different from the
        OcHnQosROStatsMacAddress parameter, then the Rotameter
        observation is for all traffic between the interface
        identified by the ocHnQosROStatsObservationMacAddress field
        on another device (which may not be a QosDevice Service)
        and the interface identified by the
        ocHnQosROStatsMacAddress parameter on this device.
        If the address is all zeros, then the Rotameter observation
        is for the entire QosSegment of the shared media technology
        identified by the QosSegmentId. For example, this parameter
        will be set to all zeros by a device that is a Layer2
        scheduler for a QosSegment when reporting statistics
        information for the entire QosSegment."
    ::= { ocHnQosROStatsEntry 4 }

ocHnQosROStatsQosSegmentId OBJECT-TYPE
    SYNTAX      OCTET STRING
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This uniquely identifies a network segment of a shared
        Media technology. This parameter needs
        to be configured to obtain traffic statistics for a
        specific QosSegment and for a specific traffic stream
        identified by a combination of Layer2StreamId and a
        QosSegmentId. The default value of 0 indicates no
        QosSegment is specified."
    ::= { ocHnQosROStatsEntry 5 }

ocHnQosROStatsTotalTrafficBytes OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of bytes of all streams (best effort,
        prioritized, and parameterized) measured in the
        observation period. A null value should be reported if
        no rotameter information is available."

```

```

 ::= { ocHnQosROStatsEntry 6 }

ocHnQosROStatsTotalParameterizedBytes OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of bytes for all parameterized streams
         in the observation period. A null value should be
         reported if no rotameter information is available."
 ::= { ocHnQosROStatsEntry 7 }

ocHnQosROStatsTotalParameterizedPackets OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of packets of all parameterized
         streams measured in the observation period. A null value
         should be reported if no rotameter information is
         available."
 ::= { ocHnQosROStatsEntry 8 }

ocHnQosROStatsTotalParameterizedPacketsDropped OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of packets dropped at layer-2 for all the
         parameterized streams in the observation period. A null
         value should be reported if no rotameter information is
         available."
 ::= { ocHnQosROStatsEntry 9 }

ocHnQosROStatsReportingDateAndTime OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Time of Completion of Observation Period. This is wall
         clock time formatted per [RFC3339], which can potentially
         be non-synchronized with other devices on the network."
 ::= { ocHnQosROStatsEntry 10 }

ocHnQosROStatsObservationPeriod OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This integer field specifies the duration in seconds over
         which the RotameterObservation is performed."
 ::= { ocHnQosROStatsEntry 11 }

ocHnQosROStatsMonitorResolutionPeriod OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This integer field specifies, in seconds, how often a
         Rotameter observation is initiated."
 ::= { ocHnQosROStatsEntry 12 }

ocHnQosStreamStatisticsTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF OcHnQosStreamStatisticsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION

```

```

        "This table reports stream-specific statistics
        collected as a result of the current rotameter observation.
        Null values must be returned if no observations have been
        collected."
 ::= { ocHnQos 4 }

ocHnQosStreamStatisticsEntry OBJECT-TYPE
    SYNTAX      OcHnQosStreamStatisticsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "One entry report of counter values for
        each unique streamId."
    INDEX { ocHnQosROStatsIndex }
 ::= { ocHnQosStreamStatisticsTable 1 }

OcHnQosStreamStatisticsEntry ::=
    SEQUENCE {
        ocHnQosStreamStatisticsTrafficHandle
            OCTET STRING,
        ocHnQosStreamStatisticsLayer2StreamId
            OCTET STRING,
        ocHnQosStreamStatisticsPktsTransmitted
            Counter32,
        ocHnQosStreamStatisticsPktsReceived
            Counter32,
        ocHnQosStreamStatisticsErrorPktsDropped
            Counter32,
        ocHnQosStreamStatisticsBytesTransmitted
            Counter32,
        ocHnQosStreamStatisticsBytesReceived
            Counter32,
        ocHnQosStreamStatisticsPeakDataRateViolations
            TruthValue
    }

ocHnQosStreamStatisticsTrafficHandle OBJECT-TYPE
    SYNTAX      OCTET STRING
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Identifies a unique UPnP QoS traffic stream over the home
        network."
 ::= { ocHnQosStreamStatisticsEntry 1 }

ocHnQosStreamStatisticsLayer2StreamId OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (64) )
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Identifies a unique traffic stream over an RSD Technology
        Qos Segment identified by a QosSegmentId."
 ::= { ocHnQosStreamStatisticsEntry 2 }

ocHnQosStreamStatisticsPktsTransmitted OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This parameter reports total number of packets
        transmitted of a parameterized traffic stream
        specified in the current rotameter observation."
 ::= { ocHnQosStreamStatisticsEntry 3 }

ocHnQosStreamStatisticsPktsReceived OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only

```

```

STATUS      current
DESCRIPTION
    "This parameter reports total number of packets
    received for a parameterized traffic stream specified
    in the current rotameter observation."
 ::= { ocHnQoSStreamStatisticsEntry 4 }

ocHnQoSStreamStatisticsErrorPktsDropped OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This parameter reports total number of dropped packets
    at layer-2 of a parameterized traffic stream specified in
    the current rotameter observation."
 ::= { ocHnQoSStreamStatisticsEntry 5 }

ocHnQoSStreamStatisticsBytesTransmitted OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This parameter reports total number of bytes transmitted of
    a parameterized traffic stream specified in
    the current rotameter observation."
 ::= { ocHnQoSStreamStatisticsEntry 6 }

ocHnQoSStreamStatisticsBytesReceived OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This parameter reports total number of bytes
    received of the parameterized traffic stream
    specified in the current rotameter observation."
 ::= { ocHnQoSStreamStatisticsEntry 7 }

ocHnQoSStreamStatisticsPeakDataRateViolations OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "If true, this parameter indicates the source is exceeding
    specified peak data rate for a traffic stream over the
    Observation period."
 ::= { ocHnQoSStreamStatisticsEntry 8 }

--
-- QoS Priority-based Statistics for PSD devices only
--

ocHnQoSPriorityTrafficTable OBJECT-TYPE
SYNTAX      SEQUENCE OF OcHnQoSPriorityTrafficEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This table contains a set of priority-based
    stream traffic statistics. It is indexed by the
    Rotameter Observation Statistics table index. This
    correlates each row in this table with each row
    (i.e., observation) in the ROStatsTable."
 ::= { ocHnQoS 5 }

ocHnQoSPriorityTrafficEntry OBJECT-TYPE
SYNTAX      OcHnQoSPriorityTrafficEntry
MAX-ACCESS  not-accessible
STATUS      current

```

```

DESCRIPTION
    "Each entry reflects traffic statistics
    for one priority."
INDEX { ocHnQosROStatsIndex }
 ::= { ocHnQosPriorityTrafficTable 1 }

OcHnQosPriorityTrafficEntry ::=
SEQUENCE {
    ocHnQosTrafficTotalBytesPriority0
        Counter32,
    ocHnQosTrafficTotalBytesPriority1
        Counter32,
    ocHnQosTrafficTotalBytesPriority2
        Counter32,
    ocHnQosTrafficTotalBytesPriority3
        Counter32,
    ocHnQosTrafficTotalBytesPriority4
        Counter32,
    ocHnQosTrafficTotalBytesPriority5
        Counter32,
    ocHnQosTrafficTotalBytesPriority6
        Counter32,
    ocHnQosTrafficTotalBytesPriority7
        Counter32
}

ocHnQosTrafficTotalBytesPriority0 OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Total number of bytes of all strictly prioritized
    flows interpreted as TrafficImportanceNumber '0'
    during the Observation period."
 ::= { ocHnQosPriorityTrafficEntry 1 }

ocHnQosTrafficTotalBytesPriority1 OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Total number of bytes of all strictly prioritized
    flows interpreted as TrafficImportanceNumber '1'
    during the Observation period."
 ::= { ocHnQosPriorityTrafficEntry 2 }

ocHnQosTrafficTotalBytesPriority2 OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Total number of bytes of all strictly prioritized
    flows interpreted as TrafficImportanceNumber '2'
    during the Observation period."
 ::= { ocHnQosPriorityTrafficEntry 3 }

ocHnQosTrafficTotalBytesPriority3 OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Total number of bytes of all strictly prioritized
    flows interpreted as TrafficImportanceNumber '3'
    during the Observ."
 ::= { ocHnQosPriorityTrafficEntry 4 }

ocHnQosTrafficTotalBytesPriority4 OBJECT-TYPE

```

```

SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Total number of bytes of all strictly prioritized
    flows interpreted as TrafficImportanceNumber '4'
    during the Observation period."
 ::= { ocHnQosPriorityTrafficEntry 5 }

ocHnQosTrafficTotalBytesPriority5 OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Total number of bytes of all strictly prioritized
    flows interpreted as TrafficImportanceNumber '5'
    during the Observation period."
 ::= { ocHnQosPriorityTrafficEntry 6 }

ocHnQosTrafficTotalBytesPriority6 OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Total number of bytes of all strictly prioritized
    flows interpreted as TrafficImportanceNumber '6'
    during the Observation period."
 ::= { ocHnQosPriorityTrafficEntry 7 }

ocHnQosTrafficTotalBytesPriority7 OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Total number of bytes of all strictly prioritized
    flows interpreted as TrafficImportanceNumber '7'
    during the Observation period."
 ::= { ocHnQosPriorityTrafficEntry 8 }

--
-- Static configuration parameters
--

--
-- Static PQoS Device Table
--

ocHnStaticPQoSConfiguration OBJECT IDENTIFIER ::= { ocHnQos 6 }

ocHnStaticPQoSStatus OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "This object enables or disables the function on the local
    device to create Static PQoS flows on the HN. Disabling
    Static PQoS does not interrupt existing flows but prevents
    new flows from being established. Static PQoS must only
    be enabled on one device in the HN to avoid creation of
    multiple duplicate PQoS flows between trusted devices
    in the HN."
 ::= { ocHnStaticPQoSConfiguration 1 }

ocHnStaticPQoSDeviceTable OBJECT-TYPE
SYNTAX      SEQUENCE OF OcHnStaticPQoSDeviceEntry
MAX-ACCESS  not-accessible
STATUS      current

```

DESCRIPTION

"This table contains the MAC addresses of devices trusted to participate in Static PQoS flows. Any devices in this table may be paired to establish PQoS flows. No traffic policy policing is expected for any of these flows. The table contents must be persistent through reboots. The table must support at least 15 entries. The application software should update the state of its view of the current network topology and PQoS status at least once per minute in order to determine if a PQoS flow needs to be re-established following a device reboot or some other event. The application software uses the MIB and the current network topology to set up / update /delete PQoS flows. Care must be taken when populating the Static PQoS Device Table to ensure multiple devices that support the application software do not create duplicate PQoS flows between trusted devices in the ocHnStaticPQoSDeviceTable."

```
::= { ocHnStaticPQoSConfiguration 2 }
```

ocHnStaticPQoSDeviceEntry OBJECT-TYPE

```
SYNTAX      OcHnStaticPQoSDeviceEntry
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

DESCRIPTION

"Each entry represents the MAC address eligible to participate in Static PQoS flows."

```
INDEX { ocHnStaticPQoSDeviceIndex }
```

```
::= { ocHnStaticPQoSDeviceTable 1 }
```

OcHnStaticPQoSDeviceEntry ::=

```
SEQUENCE {
    ocHnStaticPQoSDeviceIndex
        Unsigned32,
    ocHnStaticPQoSDeviceRowStatus
        RowStatus,
    ocHnStaticPQoSDeviceActive
        TruthValue,
    ocHnStaticPQoSDeviceMACAddress
        MacAddress
}
```

ocHnStaticPQoSDeviceIndex OBJECT-TYPE

```
SYNTAX      Unsigned32 (1..4294967295)
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

DESCRIPTION

"Table Index."

```
::= { ocHnStaticPQoSDeviceEntry 1 }
```

ocHnStaticPQoSDeviceRowStatus OBJECT-TYPE

```
SYNTAX      RowStatus
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

DESCRIPTION

"A conceptual row cannot be active until the ocHnStaticPQoSDeviceMACAddress is configured with a MAC address."

```
::= { ocHnStaticPQoSDeviceEntry 2 }
```

ocHnStaticPQoSDeviceActive OBJECT-TYPE

```
SYNTAX      TruthValue
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

DESCRIPTION

"Setting this value to 'True' causes the device entry to be configured and activated. The default is 'False(2)' to

```

        prevent accidental configuration of flows when adding new
        MAC addresses not eligible for immediate use."
 ::= { ocHnStaticPQoSDeviceEntry 3 }

ocHnStaticPQoSDeviceMACAddress OBJECT-TYPE
    SYNTAX      MacAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Set this value to indicate the MAC address of the
        PQoS device."
 ::= { ocHnStaticPQoSDeviceEntry 4 }

--
-- Device addressing and operational status information
--

ocHnDevInterfaceStatus OBJECT IDENTIFIER ::= { ocHnMibObjects 4 }

ocHnDevInterfaceConfigTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF OcHnDevInterfaceConfigEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table augments the ifTable for each HN interface.
        It provides the mechanism for modifying and displaying
        interface characteristics not addressed by the IETF
        ifTable. The index values will serve as an external index
        to the ocHnDevStatus tables."
 ::= { ocHnDevInterfaceStatus 1 }

ocHnDevInterfaceConfigEntry OBJECT-TYPE
    SYNTAX      OcHnDevInterfaceConfigEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each entry describes an interface for a specific
        technology."
    INDEX { ifIndex }
 ::= { ocHnDevInterfaceConfigTable 1 }

OcHnDevInterfaceConfigEntry ::=
    SEQUENCE {
        ocHnDevInterfaceConfigMaxPowerLevel
            Integer32,
        ocHnDevInterfaceConfigPowerUnits
            PowerUnit,
        ocHnDevInterfaceConfigMaxParameterizedBandwidth
            Unsigned32,
        ocHnDevInterfaceConfigEnableEncryption
            INTEGER,
        ocHnDevInterfaceConfigEncryptionPassphrase
            SnmpAdminString
    }

ocHnDevInterfaceConfigMaxPowerLevel OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Maximum power level used by an RSD Technology node.
        This level is combined with the measurement units
        defined in ocHnDevInterfaceConfigPowerUnits."
 ::= { ocHnDevInterfaceConfigEntry 2 }

ocHnDevInterfaceConfigPowerUnits OBJECT-TYPE
    SYNTAX      PowerUnit

```

```

MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Reports the power units of measurement/reporting
    in ocHnDevInterfacePowerUnits used by the RSD
    technology on the interface being
    reported."
 ::= { ocHnDevInterfaceConfigEntry 3 }

ocHnDevInterfaceConfigMaxParameterizedBandwidth OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "This object requests the maximum bandwidth, as a
    percentage of total bandwidth, to be made available for
    parameterized traffic streams. The actual bandwidth made
    available for parameterized streams is represented by
    ocHnDevInterfaceStatusMaxParameterizedBandwidth object.
    This configuration takes effect only if the node
    is the Layer2Scheduler for the RSD Technology interface
    (i.e., if the ocHnDevInterfaceStatusLayer2Scheduler object
    is set to true on this node)."
 ::= { ocHnDevInterfaceConfigEntry 4 }

ocHnDevInterfaceConfigEnableEncryption OBJECT-TYPE
SYNTAX INTEGER
    {
        enabled(1),
        disabled(2)
    }
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "A Boolean parameter used to enable or disable privacy
    (link layer encryption) on the RSD Technology. The default
    is disabled(2)."
```

```

 ::= { ocHnDevInterfaceConfigEntry 5 }

ocHnDevInterfaceConfigEncryptionPassphrase OBJECT-TYPE
SYNTAX SnmpAdminString (SIZE (24 | 32) )
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "A Password or a key used for encrypting data sent over
    the RSD Technology using technology-specific encryption
    algorithm."
 ::= { ocHnDevInterfaceConfigEntry 6 }

--
-- Device Network Operating Status
--

ocHnDevInterfaceStatusTable OBJECT-TYPE
SYNTAX SEQUENCE OF OcHnDevInterfaceStatusEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "This table tracks and reports current network
    related attributes for each interface (e.g., MAC)."
```

```

 ::= { ocHnDevInterfaceStatus 2 }

ocHnDevInterfaceStatusEntry OBJECT-TYPE
SYNTAX OcHnDevInterfaceStatusEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
```

```

        "Each entry associates the network operational
        assignments for each interface."
INDEX { ifIndex }
 ::= { ocHnDevInterfaceStatusTable 1 }

OcHnDevInterfaceStatusEntry ::=
SEQUENCE {
    ocHnDevInterfaceStatusTxBroadcastRate
        Unsigned32,
    ocHnDevInterfaceStatusTxBroadcastLevel
        Tenths,
    ocHnDevInterfaceStatusMaxTxPowerLevel
        Tenths,
    ocHnDevInterfaceStatusPowerUnits
        PowerUnit,
    ocHnDevInterfaceStatusMaxParameterizedBandwidth
        Unsigned32,
    ocHnDevInterfaceStatusLayer2Scheduler
        TruthValue
    }

ocHnDevInterfaceStatusTxBroadcastRate OBJECT-TYPE
SYNTAX      Unsigned32
UNITS       "bits/sec"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Broadcast transmit rate (bits/sec) for this interface."
 ::= { ocHnDevInterfaceStatusEntry 1 }

ocHnDevInterfaceStatusTxBroadcastLevel OBJECT-TYPE
SYNTAX      Tenths
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The power level used for transmission of broadcast
    messages by the RSD node reported in units defined by
    ocHnDevInterfaceStatusPowerUnits."
 ::= { ocHnDevInterfaceStatusEntry 2 }

ocHnDevInterfaceStatusMaxTxPowerLevel OBJECT-TYPE
SYNTAX      Tenths
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The absolute maximum power level that a node
    is capable of transmitting. The power units
    are defined in ocHnDevInterfaceStatusPowerUnits."
 ::= { ocHnDevInterfaceStatusEntry 3 }

ocHnDevInterfaceStatusPowerUnits OBJECT-TYPE
SYNTAX      PowerUnit
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Reports the power units of measurement/reporting
    in ocHnDevInterfacePowerUnits used by the RSD
    technology on the interface being reported."
 ::= { ocHnDevInterfaceStatusEntry 4 }

ocHnDevInterfaceStatusMaxParameterizedBandwidth OBJECT-TYPE
SYNTAX      Unsigned32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The actual bandwidth, as a percentage of total, that can
    be utilized for reservation-based (parameterized)

```

```

        traffic streams. A value of '0' should be reported if
        this node is not a layer2scheduler for the RSD Technology
        interface (i.e., if the
        ocHnDevInterfaceStatusLayer2Scheduler
        object is set to false on this node)."
 ::= { ocHnDevInterfaceStatusEntry 5 }

ocHnDevInterfaceStatusLayer2Scheduler OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This Boolean parameter indicates whether this particular
        node is a layer-2 scheduler."
 ::= { ocHnDevInterfaceStatusEntry 6 }

--
-- Logical Device Connection Table
--

ocHnDevConnectionTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF OcHnDevConnectionEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table defines the logical connections, by MAC,
        of all the devices known to this interface."
 ::= { ocHnDevInterfaceStatus 3 }

ocHnDevConnectionEntry OBJECT-TYPE
    SYNTAX      OcHnDevConnectionEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each entry associates the network operational
        attributes of the connections for each interface."
    INDEX { ifIndex, ocHnDevConnectionIndex }
 ::= { ocHnDevConnectionTable 1 }

OcHnDevConnectionEntry ::=
    SEQUENCE {
        ocHnDevConnectionIndex
            Unsigned32,
        ocHnDevConnectionDestMac
            MacAddress,
        ocHnDevConnectionRxLinkRate
            Unsigned32,
        ocHnDevConnectionRxModulationType
            SnmpAdminString,
        ocHnDevConnectionRxBroadcastRate
            Unsigned32,
        ocHnDevConnectionRxSignalStrength
            Tenths,
        ocHnDevConnectionTxUnicastLevel
            Tenths,
        ocHnDevConnectionPowerUnits
            PowerUnit,
        ocHnDevConnectionTxLinkRate
            Unsigned32,
        ocHnDevConnectionTxModulationType
            SnmpAdminString
    }

ocHnDevConnectionIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..4294967295)
    MAX-ACCESS  not-accessible
    STATUS      current

```

```

DESCRIPTION
    "Secondary index of the connection table."
 ::= { ocHnDevConnectionEntry 1 }

ocHnDevConnectionDestMac OBJECT-TYPE
    SYNTAX      MacAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "MAC of other device if visible to
         this device."
 ::= { ocHnDevConnectionEntry 2 }

ocHnDevConnectionRxLinkRate OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "bits/sec"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "PHY reception rate (bits/sec) on this interface
         from the node identified by its MAC address."
 ::= { ocHnDevConnectionEntry 3 }

ocHnDevConnectionRxModulationType OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Type of modulation currently being used by an
         interface on this node for reception from the
         node identified by MAC address. A value is required
         only if this is an RF technology-based connection.
         Non-RF interfaces should report 'n/a'."
 ::= { ocHnDevConnectionEntry 4 }

ocHnDevConnectionRxBroadcastRate OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "bits/sec"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Receive rate (bits/sec) at this RSD Interface for
         broadcasts initiated by the logically connected node
         identified by the destination MAC Address in
         this table entry."
 ::= { ocHnDevConnectionEntry 5 }

ocHnDevConnectionRxSignalStrength OBJECT-TYPE
    SYNTAX      Tenths
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The signal strength received at this
         interface from the associated node identified by
         the MAC address. The power units are defined
         in ocHnDevConnectionPowerUnits "
 ::= { ocHnDevConnectionEntry 6 }

ocHnDevConnectionTxUnicastLevel OBJECT-TYPE
    SYNTAX      Tenths
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The power level used for transmission of unicast
         messages by the RSD node reported in units
         defined in ocHnDevConnectionPowerUnits for

```

```

        this interface."
 ::= { ocHnDevConnectionEntry 7 }

ocHnDevConnectionPowerUnits OBJECT-TYPE
    SYNTAX      PowerUnit
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Reports the power units of measurement/reporting
         in ocHnDevInterfacePowerUnits used by the RSD
         technology on the interface being
         reported."
 ::= { ocHnDevConnectionEntry 8 }

ocHnDevConnectionTxLinkRate OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "bits/sec"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "PHY transmission rate (bits/sec) from this interface
         to the node identified by MAC addresses."
 ::= { ocHnDevConnectionEntry 9 }

ocHnDevConnectionTxModulationType OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The modulation type currently employed by this
         interface while transmitting to the node
         identified by its MAC address. A value is required
         only if this is an RF technology-based connection.
         Non-RF interfaces should report 'n/a'."
 ::= { ocHnDevConnectionEntry 10 }

--

ocHnConformance      OBJECT IDENTIFIER ::= { ocHnMibModule 3 }
ocHnMIBCompliances   OBJECT IDENTIFIER ::= { ocHnConformance 1 }
ocHnMIBGroups        OBJECT IDENTIFIER ::= { ocHnConformance 2 }

-- Compliance statements

ocHnMIBCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The requirements for conformance to the OpenCable
         Home Networking MIB."
    MODULE -- this module
    MANDATORY-GROUPS {
        ocHnHomeNetworkStatusGroup,
        ocHnGenericDevInterfaceGroup
    }

    GROUP ocHnRotameterConfigGroup
    DESCRIPTION
        "This group is an optional implementation."

    GROUP ocHnQosTrafficDescInfo
    DESCRIPTION
        "This group is an optional implementation."

    GROUP ocHnQosGroup
    DESCRIPTION
        "This group is an optional implementation."
 ::= { ocHnMIBCompliances 1 }

```

```

ocHnHomeNetworkStatusGroup OBJECT-GROUP
  OBJECTS
    {
      ocHnRsdManagerImportanceNumber,
      ocHnRsdManagerPreferredStatus,
      ocHnDevUpnpServiceType,
      ocHnDevUpnpServiceAvailable,
      ocHnDevSupportedChannelLastOperatingFreq,
      ocHnDevSupportedChannelInUse,
      ocHnDevSupportedChannelFrequency,
      ocHnDevSupportedChannelEligible,
      ocHnDevPropertiesFriendlyName
    }
  STATUS
    current
  DESCRIPTION
    "Defines the objects used to report the status
    of the home network."
  ::= { ocHnMIBGroups 1 }

ocHnGenericDevInterfaceGroup OBJECT-GROUP
  OBJECTS
    {
      ocHnDevInterfaceConfigMaxPowerLevel,
      ocHnDevInterfaceConfigPowerUnits,
      ocHnDevInterfaceConfigMaxParameterizedBandwidth,
      ocHnDevInterfaceConfigEnableEncryption,
      ocHnDevInterfaceConfigEncryptionPassphrase,
      ocHnDevInterfaceStatusLayer2Scheduler,
      ocHnDevInterfaceStatusTxBroadcastLevel,
      ocHnDevInterfaceStatusTxBroadcastRate,
      ocHnDevInterfaceStatusMaxTxPowerLevel,
      ocHnDevInterfaceStatusPowerUnits,
      ocHnDevInterfaceStatusMaxParameterizedBandwidth,
      ocHnDevConnectionDestMac,
      ocHnDevConnectionRxLinkRate,
      ocHnDevConnectionRxModulationType,
      ocHnDevConnectionRxBroadcastRate,
      ocHnDevConnectionRxSignalStrength,
      ocHnDevConnectionPowerUnits,
      ocHnDevConnectionTxUnicastLevel,
      ocHnDevConnectionTxLinkRate,
      ocHnDevConnectionTxModulationType
    }
  STATUS
    current
  DESCRIPTION
    "The objects common to all the OCHN interfaces."
  ::= { ocHnMIBGroups 2 }

ocHnRotameterConfigGroup OBJECT-GROUP
  OBJECTS
    {
      ocHnRotameterConfigRowStatus,
      ocHnRotameterConfigQosSegmentId,
      ocHnRotameterConfigObservationActive,
      ocHnRotameterConfigEndpointMacAddress,
      ocHnRotameterConfigPeriod,
      ocHnRotameterConfigMonitorResolutionPeriod,
      ocHnPerStreamRotameterConfigRowStatus,
      ocHnPerStreamRotameterConfigLayer2StreamId,
      ocHnPerStreamRotameterConfigTrafficHandle,
      ocHnPerStreamRotameterConfigObservationActive
    }
  STATUS
    current
  DESCRIPTION
    "The collection of objects used to create one or more
    Rotameter configurations that may be activated via
    SNMP."
  ::= { ocHnMIBGroups 3 }

```

```

ocHnQosTrafficDescInfo OBJECT-GROUP
  OBJECTS
    {
      ocHnQosStreamsInfoCollectionTrigger,
      ocHnQosTrafficQDMacAddress,
      ocHnQosTrafficHandle,
      ocHnQosTrafficNetworkAddressType,
      ocHnQosTrafficSourceAddress,
      ocHnQosTrafficSourcePort,
      ocHnQosTrafficDestinationAddress,
      ocHnQosTrafficDestinationPort,
      ocHnQosTrafficIpProtocol,
      ocHnQosTrafficV3TrafficIdSourceUuid,
      ocHnQosTrafficV3TrafficIdDestinationUuid,
      ocHnQosTrafficMediaServerConnectionId,
      ocHnQosTrafficMediaRendererConnectionId,
      ocHnQosTrafficLeaseTime,
      ocHnQosTrafficCritical,
      ocHnQosTrafficUserName,
      ocHnQosTrafficVendorApplicationName,
      ocHnQosTrafficPortName,
      ocHnQosTrafficServiceProviderServiceName,
      ocHnQosTrafficCpName,
      ocHnQosTspec,
      ocHnQosActiveTspec,
      ocHnQosTspecTrafficClass,
      ocHnQosTspecReqQosType,
      ocHnQosTspecDataRate,
      ocHnQosTspecPeakDataRate,
      ocHnQosTspecMaxBurstSize,
      ocHnQosTspecMaxPacketSize,
      ocHnQosTspecE2EMaxDelayHigh,
      ocHnQosTspecE2EMaxJitter,
      ocHnQosPolicyRowStatus,
      ocHnQosPolicyIpAddressType,
      ocHnQosPolicySourceAddressUpLimit,
      ocHnQosPolicySourceAddressLowLimit,
      ocHnQosPolicySourcePortUpLimit,
      ocHnQosPolicySourcePortLowLimit,
      ocHnQosPolicyDestinationAddressUpLimit,
      ocHnQosPolicyDestinationAddressLowLimit,
      ocHnQosPolicyDestinationPortUpLimit,
      ocHnQosPolicyDestinationPortLowLimit,
      ocHnQosPolicyIpProtocolUpLimit,
      ocHnQosPolicyIpProtocolLowLimit,
      ocHnQosPolicyTrafficClass,
      ocHnQosPolicyPeakDataRateUpLimit,
      ocHnQosPolicyPeakDataRateLowLimit,
      ocHnQosPolicyMeanDataRateUpLimit,
      ocHnQosPolicyMeanDataRateLowLimit,
      ocHnQosPolicyMaxBurstSizeUpLimit,
      ocHnQosPolicyMaxBurstSizeLowLimit,
      ocHnQosPolicyE2EMaxDelayHighLimit,
      ocHnQosPolicyE2EMaxDelayLowLimit,
      ocHnQosPolicyBoundaryAddressType,
      ocHnQosPolicyBoundarySourceAddressUpLimit,
      ocHnQosPolicyBoundarySourceAddressLowLimit,
      ocHnQosPolicyBoundaryDestinationAddressUpLimit,
      ocHnQosPolicyBoundaryDestinationAddressLowLimit,
      ocHnQosPolicyUserName,
      ocHnQosPolicyVendorApplicationName,
      ocHnQosPolicyPortName,
      ocHnQosPolicyServiceProviderServiceName,
      ocHnQosPolicyCriticalFlag,
      ocHnQosPolicyRequestedQosType,
      ocHnQosPolicyStartTime,
      ocHnQosPolicyEndTime,
    }

```

```

        ocHnQosPolicyTrafficLeaseTimeUpValue,
        ocHnQosPolicyTrafficLeaseTimeLowValue,
        ocHnQosPolicyRuleType,
        ocHnQosPolicyRulePriority,
        ocHnQosPolicyTrafficImportanceNumber,
        ocHnQosPolicyUserImportanceNumber
    }
STATUS      current
DESCRIPTION
    "List of objects used to acquire QOS traffic attributes
    as well as set QOS Policies."
 ::= { ocHnMIBGroups 4 }

ocHnQosGroup OBJECT-GROUP
OBJECTS      {
    ocHnQosROStatsIdentifier,
    ocHnQosROStatsMacAddress,
    ocHnQosROStatsObservationMacAddress,
    ocHnQosROStatsQosSegmentId,
    ocHnQosROStatsTotalTrafficBytes,
    ocHnQosROStatsTotalParameterizedBytes,
    ocHnQosROStatsTotalParameterizedPackets,
    ocHnQosROStatsTotalParameterizedPacketsDropped,
    ocHnQosROStatsReportingDateAndTime,
    ocHnQosROStatsObservationPeriod,
    ocHnQosROStatsMonitorResolutionPeriod,
    ocHnQosStreamStatisticsLayer2StreamId,
    ocHnQosStreamStatisticsPktsTransmitted,
    ocHnQosStreamStatisticsPktsReceived,
    ocHnQosStreamStatisticsErrorPktsDropped,
    ocHnQosStreamStatisticsBytesTransmitted,
    ocHnQosStreamStatisticsBytesReceived,
    ocHnQosStreamStatisticsTrafficHandle,
    ocHnQosStreamStatisticsPeakDataRateViolations,
    ocHnQosTrafficTotalBytesPriority0,
    ocHnQosTrafficTotalBytesPriority1,
    ocHnQosTrafficTotalBytesPriority2,
    ocHnQosTrafficTotalBytesPriority3,
    ocHnQosTrafficTotalBytesPriority4,
    ocHnQosTrafficTotalBytesPriority5,
    ocHnQosTrafficTotalBytesPriority6,
    ocHnQosTrafficTotalBytesPriority7,
    ocHnStaticPQosStatus,
    ocHnStaticPQosDeviceRowStatus,
    ocHnStaticPQosDeviceActive,
    ocHnStaticPQosDeviceMACAddress
}
STATUS      current
DESCRIPTION
    "Parameterized and prioritized traffic flow objects."
 ::= { ocHnMIBGroups 5 }

END

```

Annex A MIB Object Requirements

This annex defines the SNMP MIB modules and MIB variables required for the Open Cable Home Network Extension.

Table A-1 - MIB Implementation Support

Requirement Type	Table Notation	Description
Conditional Mandatory	C	The object MUST be implemented if and only if an optional underlying technology is implemented and is not represented by an external MIB.
Deprecated	D	Deprecated objects are optional. If a vendor chooses to implement the object, the object MUST be implemented correctly according to the MIB definition. If a vendor chooses not to implement the object, an agent MUST NOT instantiate such object and MUST respond with the appropriate error/exception condition (e.g., no such object for SNMPv2c).
Mandatory	M	The object MUST be implemented correctly according to the MIB definition.
Not Applicable	NA	Not applicable to the device.
Not Supported	N-SUP	An agent MUST NOT instantiate such object and MUST respond with the appropriate error/exception condition (e.g., no such object for SNMPv2c).
Optional	O	A vendor can choose to implement or not implement the object. If a vendor chooses to implement the object, the object MUST be implemented correctly according to the MIB definition. If a vendor chooses not to implement the object, an agent MUST NOT instantiate such object and MUST respond with the appropriate error/exception condition (e.g., no such object for SNMPv2c).
Obsolete	Ob	In SNMP convention, obsolete objects should not be implemented. This specification allows vendors to implement or not implement obsolete objects. If a vendor chooses to implement an obsoleted object, the object MUST be implemented correctly according to the MIB definition. If a vendor chooses not to implement the obsoleted object, the SNMP agent MUST NOT instantiate such object and MUST respond with the appropriate error/exception condition (e.g., 'noSuchObject' for SNMPv2c).

Table A-2 - SNMP Access Requirements

SNMP Access Type	Table Notation	Description
Not Accessible	N-ACC	The object is not accessible and is usually an index in a table.
RC	Read Create	The access of the object MUST be implemented as Read-Create.
RW	Read Write	The access of the object MUST be implemented as Read-Only.
RO	Read Only	The access of the object MUST be implemented as Read-Write.
RC/RO	Read Create or Read Only	The access of the object MUST be implemented as either Read-Create or Read-Only as described in the MIB definition.
RW/RO	Read Write / Read Only	The access of the object MUST be implemented as either Read-Write or Read-Only as described in the MIB definition.
Accessible for SNMP Notifications	ACC-FN	These objects are used for SNMP Notifications by the CMTS and CM SNMP Agents.

MIB Objects		
OC-HOME-NETWORK-MIB		
ocHnRsdManagerStatus		
Object	Req	Access
ocHnRsdManagerImportanceNumber	M	RW
ocHnRsdManagerPreferredStatus	M	RO
ocHnDevUpnpServiceTable		
Object	Req	Access
ocHnDevUpnpServiceIndex	M	N-Acc
ocHnDevUpnpServiceType	M	RO
ocHnDevUpnpServiceAvailable	M	RO
ocHnDevSupportedChannelTable		
Object	Req	Access
ocHnDevSupportedChannelIndex	C	RO
ocHnDevSupportedChannelLastOperatingFreq	C	RO
ocHnDevSupportedChannelInUse	C	RW
ocHnDevSupportedChannelFrequency	C	RO
ocHnDevSupportedChannelEligible	C	RW
ocHnDevProperties		
Object	Req	Access
ocHnDevPropertiesFriendlyName	M	RO
ocHnRotameterConfigTable		
Object	Req	Access
ocHnRotameterConfigIndex	O	N-Acc
ocHnRotameterConfigRowStatus	O	RC
ocHnRotameterConfigObservationActive	O	RC
ocHnRotameterConfigPeriod	O	RC
ocHnRotameterConfigMonitorResolutionPeriod	O	RC
ocHnRotameterConfigQosSegmentId	O	RC
ocHnRotameterConfigEndpointMacAddress	O	RC
ocHnPerStreamRotameterConfigTable		
Object	Req	Access
ocHnPerStreamRotameterConfigIndex	O	N-Acc
ocHnPerStreamRotameterConfigRowStatus	O	RC
ocHnPerStreamRotameterConfigLayer2StreamId	O	RC
ocHnPerStreamRotameterConfigTrafficHandle	O	RC
ocHnPerStreamRotameterConfigObservationActive	O	RC
ocHnQosTrafficInfo		
Object	Req	Access
ocHnQosStreamsInfoCollectionTrigger	O	RW
ocHnQosTrafficDescTable		
Object	Req	Access
ocHnQosTrafficDescIndex	O	N-Acc
ocHnQosTrafficHandle	O	RO
ocHnQosTrafficQDMacAddress	O	RO
ocHnQosTrafficNetworkAddressType	O	RO

MIB Objects		
ocHnQosTrafficSourceAddress	O	RO
ocHnQosTrafficSourcePort	O	RO
ocHnQosTrafficDestinationAddress	O	RO
ocHnQosTrafficDestinationPort	O	RO
ocHnQosTrafficIppProtocol	O	RO
ocHnQosTrafficV3TrafficIdSourceUuid	O	RO
ocHnQosTrafficV3TrafficIdDestinationUuid	O	RO
ocHnQosTrafficMediaServerConnectionId	O	RO
ocHnQosTrafficMediaRendererConnectionId	O	RO
ocHnQosTrafficLeaseTime	O	RO
ocHnQosTrafficCritical	O	RO
ocHnQosTrafficUserName	O	RO
ocHnQosTrafficVendorApplicationName	O	RO
ocHnQosTrafficPortName	O	RO
ocHnQosTrafficServiceProviderServiceName	O	RO
ocHnQosTrafficCpName	O	RO
ocHnQosTspecTable		
Object	Req	Access
ocHnQosTspecTableIndex	O	N-Acc
ocHnQosTspec	O	RO
ocHnQosActiveTspec	O	RO
ocHnQosTspecTrafficClass	O	RO
ocHnQosTspecReqQosType	O	RO
ocHnQosTspecDataRate	O	RO
ocHnQosTspecPeakDataRate	O	RO
ocHnQosTspecMaxBurstSize	O	RO
ocHnQosTspecMaxPacketSize	O	RO
ocHnQosTspecE2EMaxDelayHigh	O	RO
ocHnQosTspecE2EMaxJitter	O	RO
ocHnQosPolicyTable		
Object	Req	Access
ocHnQosPolicyRuleIdentifier	O	N-Acc
ocHnQosPolicyRowStatus	O	RC
ocHnQosPolicyIpAddressType	O	RC
ocHnQosPolicySourceAddressUpLimit	O	RC
ocHnQosPolicySourceAddressLowLimit	O	RC
ocHnQosPolicySourcePortUpLimit	O	RC
ocHnQosPolicySourcePortLowLimit	O	RC
ocHnQosPolicyDestinationAddressUpLimit	O	RC
ocHnQosPolicyDestinationAddressLowLimit	O	RC
ocHnQosPolicyDestinationPortUpLimit	O	RC
ocHnQosPolicyDestinationPortLowLimit	O	RC
ocHnQosPolicyIppProtocolUpLimit	O	RC
ocHnQosPolicyIppProtocolLowLimit	O	RC
ocHnQosPolicyTrafficClass	O	RC
ocHnQosPolicyPeakDataRateUpLimit	O	RC
ocHnQosPolicyPeakDataRateLowLimit	O	RC
ocHnQosPolicyMeanDataRateUpLimit	O	RC
ocHnQosPolicyMeanDataRateLowLimit	O	RC
ocHnQosPolicyMaxBurstSizeUpLimit	O	RC

MIB Objects		
ocHnQosPolicyMaxBurstSizeLowLimit	0	RC
ocHnQosPolicyE2EMaxDelayHighLimit	0	RC
ocHnQosPolicyE2EMaxDelayLowLimit	0	RC
ocHnQosPolicyBoundaryAddressType	0	RC
ocHnQosPolicyBoundarySourceAddressUpLimit	0	RC
ocHnQosPolicyBoundarySourceAddressLowLimit	0	RC
ocHnQosPolicyBoundaryDestinationAddressUpLimit	0	RC
ocHnQosPolicyBoundaryDestinationAddressLowLimit	0	RC
ocHnQosPolicyUserName	0	RC
ocHnQosPolicyVendorApplicationName	0	RC
ocHnQosPolicyPortName	0	RC
ocHnQosPolicyServiceProviderServiceName	0	RC
ocHnQosPolicyCriticalFlag	0	RC
ocHnQosPolicyRequestedQosType	0	RC
ocHnQosPolicyStartTime	0	RC
ocHnQosPolicyEndTime	0	RC
ocHnQosPolicyTrafficLeaseTimeUpValue	0	RC
ocHnQosPolicyTrafficLeaseTimeLowValue	0	RC
ocHnQosPolicyRuleType	0	RC
ocHnQosPolicyRulePriority	0	RC
ocHnQosPolicyTrafficImportanceNumber	0	RC
ocHnQosPolicyUserImportanceNumber	0	RC
ocHnQosROStatsTable		
Object	Req	Access
ocHnQosROStatsIndex	0	N-Acc
ocHnQosROStatsIdentifier	0	RO
ocHnQosROStatsMacAddress	0	RO
ocHnQosROStatsObservationMacAddress	0	RO
ocHnQosROStatsQosSegmentId	0	RO
ocHnQosROStatsTotalTrafficBytes	0	RO
ocHnQosROStatsTotalParameterizedBytes	0	RO
ocHnQosROStatsTotalParameterizedPackets	0	RO
ocHnQosROStatsTotalParameterizedPacketsDropped	0	RO
ocHnQosROStatsReportingDateAndTime	0	RO
ocHnQosROStatsObservationPeriod	0	RO
ocHnQosROStatsMonitorResolutionPeriod	0	RO
ocHnQosStreamStatisticsTable		
Object	Req	Access
ocHnQosStreamStatisticsTrafficHandle	0	RO
ocHnQosStreamStatisticsLayer2StreamId	0	RO
ocHnQosStreamStatisticsPktsTransmitted	0	RO
ocHnQosStreamStatisticsPktsReceived	0	RO
ocHnQosStreamStatisticsErrorPktsDropped	0	RO
ocHnQosStreamStatisticsBytesTransmitted	0	RO
ocHnQosStreamStatisticsBytesReceived	0	RO
ocHnQosStreamStatisticsPeakDataRateViolations	0	RO
ocHnQosPriorityTrafficTable (PSD only)		
Object	Req	Access
ocHnQosTrafficTotalBytesPriority0	0	RO

MIB Objects		
ocHnQoSTrafficTotalBytesPriority1	O	RO
ocHnQoSTrafficTotalBytesPriority2	O	RO
ocHnQoSTrafficTotalBytesPriority3	O	RO
ocHnQoSTrafficTotalBytesPriority4	O	RO
ocHnQoSTrafficTotalBytesPriority5	O	RO
ocHnQoSTrafficTotalBytesPriority6	O	RO
ocHnQoSTrafficTotalBytesPriority7	O	RO
ocHnStaticPQosConfiguration		
Object	Req	Access
ocHnStaticPQosStatus	O	RW
ocHnStaticPQosDeviceRowStatus,	O	RC
ocHnStaticPQosDeviceActive,	O	RC
ocHnStaticPQosDeviceMACAddress	O	RC
ocHnDevInterfaceConfigTable		
Object	Req	Access
ocHnDevInterfaceConfigMaxPowerLevel	M	RW
ocHnDevInterfaceConfigPowerUnits	M	RO
ocHnDevInterfaceConfigMaxParameterizedBandwidth	M	RW
ocHnDevInterfaceConfigEnableEncryption	M	RW
ocHnDevInterfaceConfigEncryptionPassphrase	M	RW
ocHnDevInterfaceStatusTable		
Object	Req	Access
ocHnDevInterfaceStatusTxBroadcastRate	M	RO
ocHnDevInterfaceStatusTxBroadcastLevel	M	RO
ocHnDevInterfaceStatusMaxTxPowerLevel	M	RO
ocHnDevInterfaceStatusPowerUnits	M	RO
ocHnDevInterfaceStatusMaxParameterizedBandwidth	M	RO
ocHnDevInterfaceStatusLayer2Scheduler	M	RO
ocHnDevConnectionTable		
Object	Req	Access
ocHnDevConnectionIndex	M	N-Acc
ocHnDevConnectionDestMac	M	RO
ocHnDevConnectionRxLinkRate	M	RO
ocHnDevConnectionRxModulationType	M	RO
ocHnDevConnectionRxBroadcastRate	M	RO
ocHnDevConnectionRxSignalStrength	M	RO
ocHnDevConnectionTxUnicastLevel	M	RO
ocHnDevConnectionPowerUnits	M	RO
ocHnDevConnectionTxLinkRate	M	RO
ocHnDevConnectionTxModulationType	M	RO
IF-MIB (RFC2863)		
ifTable		
Object	Req	Access
ifIndex	M	RO
ifDescr	M	RO
ifType	M	RO
ifMtu	M	RO

MIB Objects		
ifSpeed	M	RO
ifPhysAddress	M	RO
ifAdminStatus	M	RW
ifOperStatus	M	RO
ifLastChange	M	RO
ifInOctets	M	RO
ifInUcastPkts	M	RO
ifInDiscards	M	RO
ifInErrors	M	RO
ifInUnknownProtos	M	RO
ifOutOctets	M	RO
ifOutUcastPkts	M	RO
ifOutDiscards	M	RO
ifOutErrors	M	RO
ifXTable		
Object	Req	Access
ifName	M	RO
ifInMulticastPkts	M	RO
ifInBroadcastPkts	M	RO
ifOutMulticastPkts	M	RO
ifOutBroadcastPkts	M	RO
ipAddressTable		
Object	Req	Access
ipAddressAddrType	M	N-Acc
ipAddressAddr	M	N-Acc
ipAddressIfIndex	M	RC
ipAddressType	M	RC
ipAddressPrefix	M	RO
ipAddressOrigin	M	RO
ipAddressStatus	M	RC
ipAddressCreated	M	RO
ipAddressLastChanged	M	RO
ipAddressRowStatus	M	RC
ipAddressStorageType	M	RC

Appendix I OCHN MIB Maps

The information in the following tables provides an informational resource for those who may be interested in contrasting the required OCHN MIB with implemented RSD technology-specific MIBs. For example, network operators might find the information helpful to distinguish the differences between similar MIB objects.

I.1 OCHN to MoCA MIB Map

OCAP HN MIB Object-Type	MoCA11 MIB v1.01 Object-Type	Comments/Notes:
Reserved Services Domain Status Objects		
ocHnRsdManagerImportanceNumber	N/A	
ocHnRsdManagerPreferredStatus	N/A	
UPnP Services Status information Objects		
ocHnDevUpnpServiceType	N/A	
ocHnDevUpnpServiceAvailable	N/A	
Supported Channels Table Objects		
ocHnDevSupportedChannelLastOperatingFreq	mocaIfLOF	
ocHnDevSupportedChannelInUse	mocaIfRFChannel	
ocHnDevSupportedChannelFrequency	mocaIfChannelMask	
ocHnDevSupportedChannelEligible	mocaIfChannelMask	
Rotameter configuration options objects		
ocHnRotameterConfigRowStatus	N/A	
ocHnRotameterConfigObservationActive	N/A	
ocHnRotameterConfigPeriod	N/A	
ocHnRotameterConfigMonitorResolutionPeriod	N/A	
ocHnRotameterConfigQosSegmentId	N/A	
ocHnRotameterConfigEndpointMacAddress	N/A	
Rotameter augmentation table Objects		
ocHnPerStreamRotameterConfigRowStatus	N/A	
ocHnPerStreamRotameterConfigLayer2StreamId	N/A	
ocHnPerStreamRotameterConfigTrafficHandle	N/A	
ocHnPerStreamRotameterConfigObservationActive	N/A	
Dynamic configuration parameters		
ocHnQosStreamsInfoCollectionTrigger	N/A	
QoS traffic descriptor table Objects		
ocHnQosTrafficQDMacAddress	N/A	
ocHnQosTrafficHandle	N/A	
ocHnQosTrafficNetworkAddressType	N/A	
ocHnQosTrafficSourceAddress	N/A	

OCAP HN MIB Object-Type	MoCA11 MIB v1.01 Object-Type	Comments/Notes:
ocHnQosTrafficSourcePort	N/A	
ocHnQosTrafficDestinationAddress	N/A	
ocHnQosTrafficDestinationPort	N/A	
ocHnQosTrafficIpProtocol	N/A	
ocHnQosTrafficV3TrafficIdSourceUuid	N/A	
ocHnQosTrafficV3TrafficIdDestinationUuid	N/A	
ocHnQosTrafficMediaServerConnectionId	N/A	
ocHnQosTrafficMediaRendererConnectionId	N/A	
ocHnQosTrafficLeaseTime	N/A	
ocHnQosTrafficCritical	N/A	
ocHnQosTrafficUserName	N/A	
ocHnQosTrafficVendorApplicationName	N/A	
ocHnQosTrafficPortName	N/A	
ocHnQosTrafficServiceProviderServiceName	N/A	
ocHnQosTrafficCpName	N/A	
TSpec Table		
ocHnQosTspec	N/A	
ocHnQosActiveTspec	N/A	
ocHnQosTspecTrafficClass	N/A	
ocHnQosTspecReqQosType	N/A	
ocHnQosTspecDataRate	N/A	
ocHnQosTspecPeakDataRate	N/A	
ocHnQosTspecMaxBurstSize	N/A	
ocHnQosTspecMaxPacketSize	N/A	
ocHnQosTspecE2EMaxDelayHigh	N/A	
ocHnQosTspecE2EMaxJitter	N/A	
Policy table Objects		
ocHnQosPolicyRuleIdentifier	N/A	
ocHnQosPolicyRowStatus	N/A	
ocHnQosPolicyIpAddressType	N/A	
ocHnQosPolicySourceAddressUpLimit	N/A	
ocHnQosPolicySourceAddressLowLimit	N/A	
ocHnQosPolicySourcePortUpLimit	N/A	
ocHnQosPolicySourcePortLowLimit	N/A	
ocHnQosPolicyDestinationAddressUpLimit	N/A	
ocHnQosPolicyDestinationAddressLowLimit	N/A	
ocHnQosPolicyDestinationPortUpLimit	N/A	
ocHnQosPolicyDestinationPortLowLimit	N/A	

OCAP HN MIB Object-Type	MoCA11 MIB v1.01 Object-Type	Comments/Notes:
ocHnQosPolicyIpProtocolUpLimit	N/A	
ocHnQosPolicyIpProtocolLowLimit	N/A	
ocHnQosPolicyTrafficClass	N/A	
ocHnQosPolicyPeakDataRateUpLimit	N/A	
ocHnQosPolicyPeakDataRateLowLimit	N/A	
ocHnQosPolicyMeanDataRateUpLimit	N/A	
ocHnQosPolicyMeanDataRateLowLimit	N/A	
ocHnQosPolicyMaxBurstSizeUpLimit	N/A	
ocHnQosPolicyMaxBurstSizeLowLimit	N/A	
ocHnQosPolicyE2EMaxDelayHighLimit	N/A	
ocHnQosPolicyE2EMaxDelayLowLimit	N/A	
ocHnQosPolicyBoundaryAddressType	N/A	
ocHnQosPolicyBoundarySourceAddressUpLimit	N/A	
ocHnQosPolicyBoundarySourceAddressLowLimit	N/A	
ocHnQosPolicyBoundaryDestinationAddressUpLimit	N/A	
ocHnQosPolicyBoundaryDestinationAddressLowLimit	N/A	
ocHnQosPolicyUserName	N/A	
ocHnQosPolicyVendorApplicationName	N/A	
ocHnQosPolicyPortName	N/A	
ocHnQosPolicyServiceProviderServiceName	N/A	
ocHnQosPolicyCriticalFlag	N/A	
ocHnQosPolicyRequestedQosType	N/A	
ocHnQosPolicyStartTime	N/A	
ocHnQosPolicyEndTime	N/A	
ocHnQosPolicyTrafficLeaseTimeUpValue	N/A	
ocHnQosPolicyTrafficLeaseTimeLowValue	N/A	
ocHnQosPolicyRuleType	N/A	
ocHnQosPolicyRulePriority	N/A	
ocHnQosPolicyTrafficImportanceNumber	N/A	
ocHnQosPolicyUserImportanceNumber	N/A	
QoS Statistics for RSD Technologies only Objects		
ocHnQosROStatsTable		
ocHnQosROStatsIdentifier	N/A	
ocHnQosROStatsMacAddress	N/A	
ocHnQosROStatsObservationMacAddress	N/A	
ocHnQosROStatsQosSegmentId	N/A	
ocHnQosROStatsTotalTrafficBytes	Not Supported	
ocHnQosROStatsTotalParameterizedBytes	Not Supported	

OCAP HN MIB Object-Type	MoCA11 MIB v1.01 Object-Type	Comments/Notes:
ocHnStreamSummaryTotalParameterizedBytesAllocated	Not Supported	
ocHnQosROStatsTotalParameterizedPackets	Not Supported	The current MoCA MIB does not distinguish total transmitted Parameterized Pkt statistics, it only includes statistics for the interface as a whole, both PQOS and non-PQOS pkts. See mocalfTxPackets.
ocHnQosROStatsTotalParameterizedPacketsDropped	Not supported	The current MoCA MIB does not distinguish total dropped Parameterized Pkt statistics, it only includes statistics for the interface as a whole, both PQOS and non-PQOS pkts. See mocalfRxDrops.
ocHnQosROStatsReportingDateAndTime	N/A	
ocHnQosROStatsObservationPeriod	N/A	
ocHnQosROStatsMonitorResolutionPeriod	N/A	
ocHnQosStreamStatisticsTable		
ocHnQosStreamStatisticsTrafficHandle	N/A	
ocHnQosStreamStatisticsLayer2StreamId	mocalfFlowID	
ocHnQosStreamStatisticsPktsTransmitted	mocalfTxPacketsFlow	
ocHnQosStreamStatisticsPktsReceived	Not supported	The current MoCA MIB does not distinguish received Parameterized Pkt statistics to a specific PQOS flow, it only includes statistics for the interface as a whole, both PQOS and non-PQOS pkts. See mocalfRxPackets.
ocHnQosStreamStatisticsErrorPktsDropped	Not supported	The current MoCA MIB does not distinguish error Parameterized Pkt statistics to a specific PQOS flow, it only includes statistics for the interface as a whole, both PQOS and non-PQOS pkts. See mocalfRxDrops.
ocHnQosStreamStatisticsBytesTransmitted	Not supported	The current MoCA MIB does not distinguish parameterized bit Tx statistics to a specific PQOS flow, it only includes statistics for the interface as a whole, both PQOS and non-PQOS pkts. The MoCA MIB does not address bit level PQOS statistics only Pkts.

OCAP HN MIB Object-Type	MoCA11 MIB v1.01 Object-Type	Comments/Notes:
ocHnQosStreamStatisticsBytesReceived	Not supported	The current MoCA MIB does not distinguish parameterized bit Rx statistics to a specific PQOS flow, it only includes statistics for the interface as a whole, both PQOS and non-PQOS pkts. The MoCA MIB does not address bit level PQOS statistics only Pkts.
ocHnQosStreamStatisticsPeakDataRateViolations	Not supported	
QoS Priority-based Statistics for PSD devices only Objects		
ocHnQosTrafficTotalBytesPriority0	Not supported	
ocHnQosTrafficTotalBytesPriority1	Not supported	
ocHnQosTrafficTotalBytesPriority2	Not supported	
ocHnQosTrafficTotalBytesPriority3	Not supported	
ocHnQosTrafficTotalBytesPriority4	Not supported	
ocHnQosTrafficTotalBytesPriority5	Not supported	
ocHnQosTrafficTotalBytesPriority6	Not supported	
ocHnQosTrafficTotalBytesPriority7	Not supported	
Device addressing and operational status information Objects		
ocHnDevInterfaceConfigMaxPowerLevel	mocaIfTxPowerLimit	Note the Max power "mocaIfTxPowerLimit" in the MoCA MIB is an attenuation level value applied to the device's maximum capable MoCA power level.
ocHnDevInterfaceConfigPowerUnits	N/A	
ocHnDevInterfaceConfigMaxParameterizedBandwidth	Not Supported	
ocHnDevInterfaceConfigEnableEncryption	mocaIfPrivacyEnable	
ocHnDevInterfaceConfigEncryptionPassphrase	mocaIfPassword	
Device Network Operating Status Objects		
ocHnDevInterfaceStatusTxBroadcastRate	mocaIfTxGcdRate	
ocHnDevInterfaceStatusTxBroadcastLevel	mocaIfTxGcdPowerReduction	The MoCA mocaIfTxGcdPowerReduction power reduction attenuation value is combined with the Max power "mocaIfTxPowerLimit" in the MoCA MIB which is an attenuation level value applied to the device's maximum capable MoCA power level.

OCAP HN MIB Object-Type	MoCA11 MIB v1.01 Object-Type	Comments/Notes:
ocHnDevInterfaceStatusMaxTxPowerLevel	Not supported	Note the actual MoCA MAX Tx power capability of a device is not identified in the MoCA MIB. The MoCA MIB identifies an attenuation level value applied to the device's maximum capable MoCA power level in the mocalfTxPowerLimit.
ocHnDevInterfaceStatusPowerUnits	N/A	
ocHnDevInterfaceStatusMaxParameterizedBandwidth	Not Supported	
ocHnDevInterfaceStatusLayer2Scheduler	mocalfNC	The "mocalfNC" identifies the MoCA node ID value of the MoCA NC on the network. If the local RSD device's MoCA NodeID is equal to the MoCA node ID contained in the "mocalfNC" parameter, the local RSD device is the ocHnDevInterfaceStatusLayer2Scheduler .
Logical Device Connection Table Objects		
ocHnDevConnectionDestMac	mocaNodeMacAddresses mocaNodeIndex mocaMeshTxNodeIndex mocaMeshRxNodeIndex	
ocHnDevConnectionRxLinkRate	mocaMeshTxRate	The Rx rate is determined in the MoCA MIB by obtaining the Tx rate from a remote node to the local node.
ocHnDevConnectionRxModulationType	Not supported	
ocHnDevConnectionRxBroadcastRate	mocaNodeTxGcdRate	The broadcast Rx rate is determined in the MoCA MIB by obtaining the Broadcast Tx rate from a remote node to the local node.
ocHnDevConnectionRxSignalStrength	mocaNodeRxPower	
ocHnDevConnectionTxUnicastLevel	mocaNodeTxPowerReduction	The MoCA mocaNodeTxPowerReduction power reduction attenuation value is combined with the Max power "mocalfTxPowerLimit "in the MoCA MIB which is an attenuation level value applied to the device's maximum capable MoCA power level.
ocHnDevConnectionPowerUnits	N/A	

OCAP HN MIB Object-Type	MoCA11 MIB v1.01 Object-Type	Comments/Notes:
ocHnDevConnectionTxLinkRate	mocaMeshTxRate	
ocHnDevConnectionTxModulationType	Not supported	

Appendix II Static PQoS Theory of Operation

This section applies to the ocHnStaticPQoSConfiguration branch of the OpenCable Home Networking MIB.

The OCHN MIB implements static PQoS objects as an OCHN standard mechanism to configure Trusted Devices in a Home Network. Within the context of Parameterized QoS, Trusted Devices are nodes in the managed network eligible to participate in Layer 2 network resource reservations. The static PQoS objects are envisioned to be used in conjunction with application logic, such as PQoS Management Software, which is responsible for managing resource reservations in the Layer 2 managed network. The application logic also determines the timing, maintenance rules and quantity of network resources to be reserved. In a managed network that supports Parameterized QoS, Resource reservations are handled through the establishment of data flows. The application logic typically monitors changes to the network topology to identify the entry and exit of Trusted Devices, and then adjusts Layer 2 resource reservations accordingly. The application logic also monitors changes to the Trusted Device list in the PQoS objects for changes that might influence resource reservations. Care must be taken when populating the Static PQoS Device Table to ensure multiple devices that support the application logic do not create duplicate PQoS flows between trusted devices listed in the ocHnStaticPQoSDeviceTable.

One such application might function as follows.

An MSO desires the ability to reserve bandwidth in a Layer 2 MoCA network in order to ensure that managed content is afforded preferential service amidst and above other network traffic, including traffic that is tagged at the same Ethernet priority level. This traffic could be multi-room DVR traffic that the MSO wants to ensure gets the highest service level treatment within the MoCA network. For example, the MSO deploys an OCHN Set-top Box (STB) with a Digital Video Recorder (DVR). The MSO uses Network Management Software to configure the list of Trusted Devices in the MoCA network, such as other non-DVR Set-top Box devices that can access content on the DVR STB device. In effect, this action serves to register the devices for PQoS application logic using the Trusted Device table. The DVR STB device includes PQoS application logic that uses the PQoS Trusted Device List in order to determine the eligible MSO devices (e.g., STBs) ready to establish flows.

The application logic periodically polls the MoCA network topology to determine if any flow management operations are required. The polling frequency is implementation-specific, but for this example, a one-minute interval is sufficient. When the application recognizes the entry of an MSO Trusted Device into the MoCA Network, it establishes flows according to rules determined by the application logic. These rules include any Transmission Specification requirements it needs to provide when creating flows in the MoCA network. On the other hand, if the application logic recognizes that one of the MSO Trusted Device goes offline (i.e., powered off or disconnected), it tears down the flows established to that device.

Appendix III Revision History

The following ECN was incorporated into OC-SP-MIB-HN-I02-100507:

ECN	Description	Date
MIB-HN-N-10.1540-1	Device Property Additions	4/30/10

The following ECN was incorporated into OC-SP-MIB-HN-I03-100910:

ECN	Description	Date
MIB-HN-N-10.1556-1	HN Static PQoS Config	7/16/10

The following ECN was incorporated into OC-SP-MIB-HN-I04-110512:

ECN	Description	Date
MIB-HN-N-11.1658-2	HN-MIB: Reference edits for OpenCable bundle inclusions	5/9/11

The following ECN was incorporated into OC-SP-MIB-HN-I05-120112:

ECN	Description	Date
MIB-HN-N-11.1685-1	Add ipAddressTable to Required MIB List	8/26/11