

**Definitions of Managed Objects for HDSL2 and SHDSL Lines**  
**draft-ietf-adslmib-hdsl2-03.txt**

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## [1.](#) Abstract

This document defines an experimental portion of the Management Information Base (MIB) MIB module for use with network management protocols in the Internet community. In particular, it describes objects used for managing HDSL2 and SHDSL interfaces.

This document specifies a MIB module in a manner that is both compliant to the SNMPv2 SMI, and semantically identical to the peer SNMPv1 definitions.

## [2.](#) The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

- o An overall architecture, described in [RFC 2571](#) [\[1\]](#).
- o Mechanisms for describing and naming objects and events for the purpose of management. The first version of this Structure of Management Information (SMI) is called SMIV1 and described in

STD 16, [RFC 1155](#) [2], STD 16, [RFC 1212](#) [3] and [RFC 1215](#) [4]. The second version, called SMIV2, is described in STD 58, [RFC 2578](#) [5], STD 58, [RFC 2579](#) [6] and STD 58, [RFC 2580](#) [7].

- o Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in STD 15, [RFC 1157](#) [8]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in [RFC 1901](#) [9] and [RFC 1906](#) [10]. The third version of the message protocol is

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called SNMPv3 and described in [RFC 1906](#) [10], [RFC 2572](#) [11] and [RFC 2574](#) [12].

- o Protocol operations for accessing management information. The first set of protocol operations and associated PDU formats is described in STD 15, [RFC 1157](#) [8]. A second set of protocol operations and associated PDU formats is described in [RFC 1905](#) [13].
- o A set of fundamental applications described in [RFC 2573](#) [14] and the view-based access control mechanism described in [RFC 2575](#) [15].

A more detailed introduction to the current SNMP Management Framework can be found in [RFC 2570](#) [16].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

This memo specifies a MIB module that is compliant to the SMIV2. A MIB conforming to the SMIV1 can be produced through the appropriate translations. The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (use of Counter64). Some machine readable information in SMIV2 will be converted into textual descriptions in SMIV1 during the translation process. However, this loss of machine readable information is not considered to change the semantics of the MIB.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [17].

## **2.1. Object Definitions**

Managed objects are accessed via a virtual information store, termed

the Management Information Base or MIB. Objects in the MIB are defined using the subset of Abstract Syntax Notation One (ASN.1) defined in the SMI. In particular, each object type is named by an OBJECT IDENTIFIER, an administratively assigned name. The object type together with an object instance serves to uniquely identify a specific instantiation of the object. For human convenience, we often use a textual string, termed the descriptor, to also refer to the object type.

### 3. Introduction

This document describes an SNMP MIB for managing HDSL2/SHDSL Lines. The MIB is intended to be compatible with both the SNMPv1 and SNMPv2. These definitions are based upon the specifications for the HDSL2 and SHDSL Embedded Operations Channel (EOC) as defined in ANSI T1E1.4/2000-006 [18] and ITU G.991.2 (ex G.SHDSL) [19].

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The MIB will eventually be located in the MIB tree under MIB 2 transmission, as discussed in the MIB-2 Integration ([RFC 1213](#) [20] and [RFC 2863](#) [21]) section of this document. Until approved by the IETF, vendors may also choose to support it under the experimental tree.

NOTE TO RFC EDITOR: please replace the above paragraph with the following paragraph when appropriate:

The MIB is located in the MIB tree under MIB-2 transmission, as discussing in the MIB-2 Integration ([RFC 1213](#) [20] and [RFC 2863](#) [21]) section of this document.

#### 3.1. Relationship of the HDSL2/SHDSL Line MIB with Standard MIBs

This section outlines the relationship of this MIB with other MIBs described in RFCs and in various degrees of "standardization". Specifically, MIB-2 as presented in [RFC 1213](#) [20] and [RFC 2863](#) [21] is discussed.

##### 3.1.1 General MIB-2 Integration (RFCs 1213 and 2863)

The HDSL2/SHDSL Line MIB specifies the detailed attributes of a data interface. As such, it needs to integrate with [RFC 2863](#) [21]. The IANA has assigned the following ifTypes to HDSL2 and SHDSL:

IANAifType ::= TEXTUAL-CONVENTION

...

SYNTAX INTEGER {

...

hds12 (168), -- High Bit-Rate DSL, 2nd generation

```

shdsl (169), -- Multirate HDSL2
...
}

```

This MIB will be accessed through the transmission subtree as shown:

```
hdsl2ShdslInterface ::= { transmission xxx }
```

NOTE TO RFC EDITOR: please replace the xxx with an assigned number

### 3.1.2 Usage of ifTable

The MIB branch identified by this ifType contains tables appropriate for this interface type. Most such tables extend the ifEntry table, and are indexed by ifIndex.

The following attributes are part of the mandatory ifGeneral group in [RFC 2863](#) [21], and are not duplicated in the HDSL2/SHDSL Line MIB.

=====		
ifIndex	Interface index.	
ifDescr	See interfaces MIB [ <a href="#">21</a> ].	
ifType	hdl2(168) or shdsl(169).	
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ifSpeed	Set as appropriate. (This is fixed at 1552000 for HDSL2 lines)	
ifPhysAddress	This object should have an octet string with zero length.	
ifAdminStatus	See interfaces MIB [ <a href="#">21</a> ].	
ifOperStatus	See interfaces MIB [ <a href="#">21</a> ].	
ifLastChange	See interfaces MIB [ <a href="#">21</a> ].	
ifName	See interfaces MIB [ <a href="#">21</a> ].	
ifLinkUpDownTrapEnable	Default to enabled(1).	
ifHighSpeed	Set as appropriate. (For HDSL2 lines, this is fixed at 2)	
ifConnectorPresent	Set as appropriate.	
=====		

Figure 1: Use of ifTable Objects

### 4.1. Naming Conventions

H2TU-C for HDSL2, or STU-C for SHDSL.

H2TU-R for HDSL2, or STU-R for SHDSL.

D. xru refer to a regenerator unit;

H2RU for HDSL2, or SRU for SHDSL.

**F. CRC is cyclic redundancy check.**

H. LOS means loss of signal.

**J.** LOSW means loss of sync word, distinct from LOS.

L. SES means severely errored second.

**N. UAS means unavailable second.**

The following textual conventions are defined to reflect the line topology in the MIB (further discussed in the following section) and to define the behaviour of the statistics to be maintained by an agent.

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- |                     |  |
|---------------------|--|
| xtuC(1)             | - CO terminal unit                                   |
| xtuR(2)             | - CPE terminal unit                                  |
| xru1(3) .. xru8(10) | - regenerators, numbered from<br>central office side |

- networkSide(1) - N in figure 2, below  
customerSide(2) - C in figure 2, below

- o Hdsl2ShdslWirePair:  
This attribute references the wire-pairs connecting the units:  
  
 wirePair1(1) - First pair for HDSL2/SHDSL.  
 wirePair2(2) - Optional second pair for SHDSL only.
- o Hdsl2ShdslTransmissionModeType:  
This attribute specifies the regional setting for a SHDSL line.  
  
 region1(1) - ITU-T G.991.2 Annex A.  
 region2(2) - ITU-T G.991.2 Annex B.  
 region3(3) - ITU-T G.991.2 Annex C.
- o Hdsl2ShdslPerfCurrDayCount:  
  
 This attribute defines the behaviour of the 1-day (24 hour) gauges found in the MIB.
- o Hdsl2Shdsl1DayIntervalCount:  
  
 This attribute defines the behaviour of the 1-day (24 hour) interval counters found in the MIB.
- o Hdsl2ShdslPerfTimeElapsed:  
  
 This attribute defines the behaviour of the elapsed time counters found in the MIB.
- o Hdsl2ShdslPerfIntervalThreshold:  
  
 This attribute defines the behaviour of the alarm thresholds found in the MIB.

#### **4.3. Structure**

The MIB is structured into following MIB groups:

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- o Span Configuration Group:  
  
 This group supports MIB objects for configuring parameters for the HDSL2/SHDSL span. It contains the following table(s):  
  
 - hdsl2ShdslSpanConfTable
- o Span Status Group:  
  
 This group supports MIB objects for retrieving span status

information. It contains the following table(s):

- hdsl2ShdslSpanStatusTable

- o Unit Inventory Group:

This group supports MIB objects for retrieving unit inventory information about units in HDSL2/SHDSL lines via the EOC. It contains the following table(s):

- hdsl2ShdslInventoryTable

- o Segment Endpoint Configuration Group:

This group supports MIB objects for configuring parameters for the HDSL2/SHDSL segment endpoints. It contains the following table(s):

- hdsl2ShdslEndpointConfTable

- o Segment Endpoint Current Status/Performance Group:

This group supports MIB objects that provide the current status/performance information relating to segment endpoints. It contains the following table(s):

- hdsl2ShdslEndpointCurrTable

- o Segment Endpoint 15-Minute Interval Status/Performance Group:

This group supports MIB objects that provide historic status/performance information relating to segment endpoints in 15-minute intervals. It contains the following table(s):

- hdsl2Shdsl15MinIntervalTable

- o Segment Endpoint 1-Day Interval Status/Performance Group:

This group supports MIB objects that provide historic status/performance information relating to segment endpoints in 1-day intervals. It contains the following table(s):

- hdsl2Shdsl1DayIntervalTable

- o Maintenance Group:

This group supports MIB objects for performing maintenance operations such as loopbacks for HDSL2/SHDSL lines. It contains



the following table(s):

- hds12ShdslEndpointMaintTable
- hds12ShdslUnitMaintTable

o Span Configuration Profile Group:

This group supports MIB objects for defining configuration profiles for HDSL2/SHDSL Spans. It contains the following table(s):

- hds12ShdslSpanConfProfileTable

o Segment Endpoint Alarm Configuration Profile Group:

This group supports MIB objects for defining alarm configuration profiles for HDSL2/SHDSL Segment Endpoints. It contains the following table(s):

- hds12ShdslEndpointAlarmConfProfileTable

o Notifications Group:

This group defines Notification messages supported for HDSL2/SHDSL lines. It defines the following notifications:

- hds12ShdslLoopAttenCrossingTrap
- hds12ShdslSNRMarginCrossingTrap
- hds12ShdslPerfESThreshTrap
- hds12ShdslPerfSESThreshTrap
- hds12ShdslPerfCRCAnomaliesThreshTrap
- hds12ShdslPerfLOSWSThreshTrap
- hds12ShdslPerfUASThreshTrap
- hds12ShdslSpanInvalidNumRepeaters
- hds12ShdslLoopbackFailure

#### **4.3.1 Line Topology**

An HDSL2/SHDSL Line consists of a minimum of two units - xtuC (the central termination unit) and an xtuR (the remote termination unit). The line may optionally support up to 8 repeater/regenerator units (xru) as shown in the figure below.

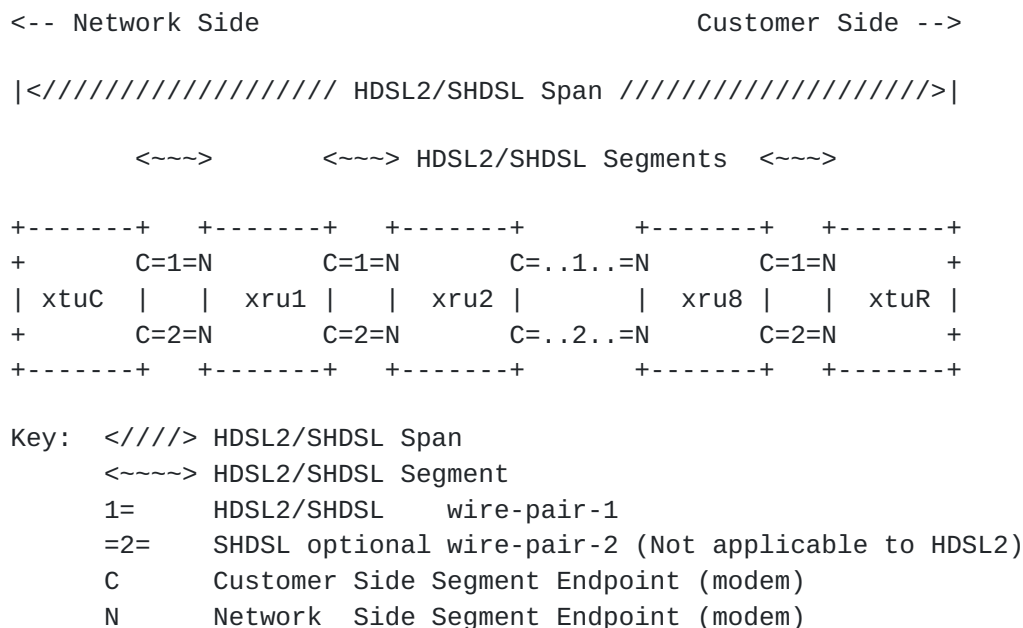


Figure 2: General topology for an HDSL2/SHDSL Line

#### 4.4. Counters, Interval Buckets and Thresholds

For SNR Margin, Loop Attenuation, ES, SES, CRC anomalies, LOSWS, and UAS, there are event counters, current 15-minute and one (up to 96) 15-minute history bucket(s) of "interval-counters", as well as current and one (up to 30) previous 1-day interval-counter(s). Each current 15-minute event bucket has an associated threshold trap.

Unlike [RFC 2493](#) [22] and [RFC 2662](#) [23], there is no representation in the MIB for invalid buckets. In those cases where the data for an interval is suspect or known to be invalid, the agent should not report the interval.

There is no requirement for an agent to ensure a fixed relationship between the start of a fifteen minute and any wall clock; however some implementations may align the fifteen minute intervals with quarter hours. Likewise, an implementation may choose to align one day intervals with the start of a day.

Counters are not reset when an xU is reinitialized, only when the agent is reset or reinitialized (or under specific request outside the scope of this MIB).

#### 4.5. Profiles

As a managed node can handle a large number of xUs, (e.g., hundreds or perhaps thousands of lines), provisioning every parameter on every

xU may become burdensome. Moreover, most lines are provisioned identically; with the same set of parameters. To simplify the provisioning process, this MIB makes use of profiles. A profile is a

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set of parameters that can be shared by multiple lines using the same configuration.

The following profiles are used in this MIB:

- o Span Configuration Profiles - Span configuration profiles contain parameters for configuring HDSL2/SHDSL spans. They are defined in the `hds12ShdslSpanConfProfileTable`. Since span configuration parameters are only applicable for SHDSL, the support for span configuration profiles is optional for HDSL2 interfaces.
- o Segment Endpoint Alarm Configuration Profiles - These profiles contain parameters for configuring alarm thresholds for HDSL2/SHDSL segment endpoints. These profiles are defined in the `hds12ShdslEndpointAlarmConfProfileTable`.

Implementations will enable the manager to dynamically create and delete profiles as needed. The index of each profile is a locally-unique administratively assigned name for the profile having the textual convention ``SnmpAdminString'` ([RFC 2571](#) [1]).

One or more lines may be configured to share parameters of a single profile (e.g., `hds12ShdslEndpointAlarmConfProfile = `silver'`) by setting its `hds12ShdslEndpointAlarmConfProfile` objects to the value of this profile. If a change is made to the profile, all lines that refer to it will be reconfigured to the changed parameters. Before a profile can be deleted or taken out of service it must be first unreferenced from all associated lines.

Implementations must provide a default profile whose name is ``DEFVAL'` for each profile type. The values of the associated parameters will be vendor specific unless otherwise indicated in this document. Before a line's profiles have been set, these profiles will be automatically used by setting `hds12ShdslEndpointAlarmConfProfile` and `hds12ShdslSpanConfProfile` to ``DEFVAL'` where appropriate.

Profiles are created, assigned, and deleted dynamically using the profile name and profile row status in each of the four profile tables.

Changes to alarm profiles MUST take effect immediately. Changes to non-alarm profiles MAY be deferred until the next restart (hard reset or soft restart) of the units on the line. Vendors MAY choose to have the non-alarm profile changes take effect immediately. Alarm profiles

are those profile settings found in the hds12ShdslEndpointAlarmConfProfileTable. Non-alarm profiles are those profile settings found in the hds12ShdslSpanConfTable and hds12ShdslSpanConfProfileTable.

#### **4.6. Traps**

The ability to generate the SNMP traps coldStart/WarmStart (per [21]) which are per agent (e.g., per DSLAM in such a device), and linkUp / linkDown (per [21]) -- which are per interface (i.e., HDLSL2/SHDSL line) is required.

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A linkDown trap may be generated whenever any of ES, SES, CRC Anomaly, LOSWS, or UAS event occurs. At this operational point, a manager can use hds12ShdslEndpointCurrStatus for additional detailed information. The corresponding linkUp trap MAY be sent when all link failure conditions are cleared.

The traps defined in this MIB are for initialization failure and for the threshold crossings associated with the following events: ES, SES, CRC Anomaly, LOSWS, and UAS. Each threshold has its own enable/threshold value. When that value is 0, the trap is disabled.

The hds12ShdslEndpointCurrStatus is a bitmask representing all outstanding error conditions associated with a particular Segment Endpoint. Note that since status of remote endpoints is obtained via the EOC, this information may be unavailable for units that are unreachable via EOC during a line error condition. Therefore, not all conditions may always be included in its current status.

Two alarm conditions, SNR Margin Alarm and Loop Attenuation Alarm, are organized in a manner slightly different from that implied in the EOC specifications. In the MIB, these alarm conditions are tied to the two thresholds hds12ShdslEndpointThreshSNRMargin and hds12ShdslEndpointThreshLoopAttenuation found in the hds12ShdslEndpointAlarmConfProfileTable. In the EOC, the alarm conditions associated with these thresholds are per-unit. In the MIB, these alarm conditions are per-endpoint. For terminal units, this has no impact. For repeaters, this implies an implementation variance where the agent in the terminal unit is responsible for detecting a threshold crossing. As the reporting of a repeater detected alarm condition to the polling terminal unit occurs in the same EOC message as the reporting of the current SNR Margin and Loop Attenuation values, it is anticipated that this will have very little impact on agent implementation.

A threshold trap occurs whenever the corresponding current 15-minute

interval error counter becomes equal to, or exceeds the threshold value. One trap may be sent per interval per interface. Since the current 15-minute counter are reset to 0 every 15 minutes, if the condition persists, the trap may recur as often as every 15 minutes. For example, to get a trap whenever a "loss of" event occurs (but at most once every 15 minutes), set the corresponding threshold to 1. The agent will generate a trap when the event originally occurs.

Note that the NMS may receive a linkDown trap, as well, if enabled. At the beginning of the next 15 minute interval, the counter is reset. When the first second goes by and the event occurs, the current interval bucket will be 1, which equals the threshold and the trap will be sent again.

## **5. Conformance and Compliance**

For both HDLSL2 and SHDSL lines, the following group(s) are mandatory:

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```
hds12ShdslSpanConfGroup
hds12ShdslSpanStatusGroup
hds12ShdslInventoryGroup
hds12ShdslEndpointConfGroup
hds12Shdsl15MinIntervalGroup
hds12Shdsl1DayIntervalGroup
hds12ShdslMaintenanceGroup
hds12ShdslEndpointAlarmConfGroup
hds12ShdslNotificationGroup
```

For HDLSL2 lines, the following group(s) are optional:

```
hds12ShdslSpanConfProfileGroup
hds12ShdslSpanShdslStatusGroup
```

## **6. Definitions**

HDLSL2-SHDSL-LINE-MIB DEFINITIONS ::= BEGIN

```
IMPORTS
MODULE-IDENTITY,
OBJECT-TYPE,
Counter32,
Gauge32,
NOTIFICATION-TYPE,
Integer32,
```

experimental                               FROM SNMPv2-SMI  
DisplayString,  
RowStatus,  
TEXTUAL-CONVENTION                       FROM SNMPv2-TC  
ifIndex                                    FROM IF-MIB  
PerfCurrentCount,  
PerfIntervalCount                         FROM PerfHist-TC-MIB  
SnmpAdminString                          FROM SNMP-FRAMEWORK-MIB  
MODULE-COMPLIANCE,  
OBJECT-GROUP,  
NOTIFICATION-GROUP                       FROM SNMPv2-CONF;

hdsl2ShdslMIB MODULE-IDENTITY

LAST-UPDATED "0010020000Z"    -- October 2, 2000

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"

DESCRIPTION

"This MIB module defines a collection of objects for managing HDLSL2/SHDSL lines. An agent may reside at either end of the line, however the MIB is designed to require no management communication between the modems beyond that inherent in the low-level EOC line protocol as defined in ANSI T1E1.4/2000-006 (for HDLSL2 lines), or in ITU G.991.2 (for SHDSL lines)."

```
-- NOTE TO RFC EDITOR: Please replace the following with the
-- appropriate assigned 'transmission xxx' number
::= { experimental 999999 }

hdsl2ShdslLineMib      OBJECT IDENTIFIER ::= { hdsl2ShdslMIB 1 }
hdsl2ShdslMibObjects OBJECT IDENTIFIER ::= { hdsl2ShdslLineMib 1 }

-- Textual Conventions used in this MIB
--
```

```
Hdsl2ShdslPerfCurrDayCount ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
        "A counter associated with interface performance
        measurements in a current 1-day (24 hour) measurement
        interval.

        The value of this counter starts at zero at the
        beginning of an interval and is increased when
        associated events occur, until the end of the
        1-day interval. At that time the value of the
        counter is stored in the previous 1-day history
        interval, if available, and the current interval
        counter is restarted at zero.

        In the case where the agent has no valid data available
        for this interval the corresponding object
        instance is not available and upon a retrieval
        request a corresponding error message shall be
        returned to indicate that this instance does
        not exist (for example, a noSuchName error for
        SNMPv1 and a noSuchInstance for SNMPv2 GET
```

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```
        operation)."
    SYNTAX  Gauge32
```

```
Hdsl2Shdsl1DayIntervalCount ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
        "A counter associated with interface performance
        measurements during the most previous 1-day (24 hour)
        measurement interval. The value of this counter is
        equal to the value of the current day counter at
        the end of its most recent interval.

        In the case where the agent has no valid data available
        for this interval the corresponding object instance is
```

not available and upon a retrieval request a corresponding error message shall be returned to indicate that this instance does not exist (for example, a noSuchName error for SNMPv1 and a noSuchInstance for SNMPv2 GET operation)."

SYNTAX Gauge32

Hdsl2ShdslPerfTimeElapsed ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The number of seconds that have elapsed since the beginning of the current measurement period. If, for some reason, such as an adjustment in the system's time-of-day clock, the current interval exceeds the maximum value, the agent will return the maximum value."

SYNTAX Gauge32

Hdsl2ShdslPerfIntervalThreshold ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This convention defines a range of values that may be set in a fault threshold alarm control. As the number of seconds in a 15-minute interval numbers at most 900, objects of this type may have a range of 0...900, where the value of 0 disables the alarm."

SYNTAX INTEGER(0..900)

Hdsl2ShdslUnitId ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This is the unique identification for all units in an HDSL2/SHDSL Span. It is based on the EOC unit addressing scheme with reference to the xtuC."

SYNTAX INTEGER

{  
xtuC(1),  
xtuR(2),  
xru1(3),

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xru2(4),  
xru3(5),  
xru4(6),  
xru5(7),  
xru6(8),  
xru7(9),



```
xru8(10)
}
```

Hdsl2ShdslUnitSide ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This is the referenced side of an HDSL2/SHDSL unit - Network or Customer side. The side facing the Network is the Network side, while the side facing the Customer is the Customer side."

SYNTAX INTEGER

```
{
    networkSide(1),
    customerSide(2)
}
```

Hdsl2ShdslWirePair ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This is the referenced pair of wires in an HDSL2/SHDSL Segment. HDSL2 only supports a single pair (wirePair1), while SHDSL supports an optional second pair (wirePair2)."

SYNTAX INTEGER

```
{
    wirePair1(1),
    wirePair2(2)
}
```

Hdsl2ShdslTransmissionModeType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Contains the regional setting of the HDSL2/SHDSL span, represented as a bit-map of possible settings. The various bit positions are:

1 region 1 Indicates ITU-T G.991.2 Annex A.

2 region 2 Indicates ITU-T G.991.2 Annex B.

4 region 3 Indicates ITU-T G.991.2 Annex C."

SYNTAX INTEGER

-- Span Configuration Group

--

hdlsl2ShdslSpanConfTable OBJECT-TYPE

SYNTAX SEQUENCE OF Hdsl2ShdslSpanConfEntry

MAX-ACCESS not-accessible

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```

STATUS      current
DESCRIPTION
    "This table supports overall configuration of
    HDLSL2/SHDSL Spans."
 ::= { hds12Shds1MibObjects 1 }

```

```

hds12Shds1SpanConfEntry OBJECT-TYPE
SYNTAX      Hds12Shds1SpanConfEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "An entry in the hds12Shds1SpanConfTable. Each entry
    represents the complete Span in a single HDLSL2/SHDSL
    line. It is indexed by the ifIndex of the associated
    HDLSL2/SHDSL line."
INDEX { ifIndex }
 ::= { hds12Shds1SpanConfTable 1 }

```

```

Hds12Shds1SpanConfEntry ::=
SEQUENCE
{
    hds12Shds1ConfNumRepeaters          INTEGER,
    hds12Shds1SpanConfProfile           SnmpAdminString,
    hds12Shds1SpanAlarmConfProfile      SnmpAdminString
}

```

```

hds12Shds1ConfNumRepeaters OBJECT-TYPE
SYNTAX      INTEGER(0..8)
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "This object provisions the number of repeaters/regenerators
    in this HDLSL2/SHDSL Span."
 ::= { hds12Shds1SpanConfEntry 1 }

```

```

hds12Shds1SpanConfProfile OBJECT-TYPE
SYNTAX      SnmpAdminString (SIZE(1..32))
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "This object is a pointer to a span configuration profile in
    the hds12Shds1SpanConfProfileTable, which applies to this span.
    The value of this object is the index of the referenced profile
    in the hds12Shds1SpanConfProfileTable. Note that span
    configuration profiles are only applicable to SHDSL lines.
    HDLSL2 lines will not support this object. By default, this
    object will have the value 'DEFVAL' (the index of the default
    profile)."
 ::= { hds12Shds1SpanConfEntry 2 }

```

hds12ShdslSpanAlarmConfProfile OBJECT-TYPE  
SYNTAX SnmpAdminString (SIZE(1..32))  
MAX-ACCESS read-write  
STATUS current

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DESCRIPTION

"This object is a pointer to an Alarm configuration profile in the hds12ShdslEndpointAlarmConfProfileTable. The value of this object is the index of the referenced profile in the hds12ShdslEndpointAlarmConfProfileTable. The alarm threshold configuration in the referenced profile will be used by default for all segment endpoints in this span. Individual endpoints may override this profile by explicitly specifying some other profile in the hds12ShdslEndpointConfTable. By default, this object will have the value 'DEFVAL' (the index of the default profile)."

::= { hds12ShdslSpanConfEntry 3 }

-- Span Status Group

--

hds12ShdslSpanStatusTable OBJECT-TYPE

SYNTAX SEQUENCE OF Hds12ShdslSpanStatusEntry  
MAX-ACCESS not-accessible  
STATUS current

DESCRIPTION

"This table provides overall status information of HDSL2/SHDSL spans."

::= { hds12ShdslMibObjects 2 }

hds12ShdslSpanStatusEntry OBJECT-TYPE

SYNTAX Hds12ShdslSpanStatusEntry  
MAX-ACCESS not-accessible  
STATUS current

DESCRIPTION

"An entry in the hds12ShdslSpanStatusTable. Each entry represents the complete span in a single HDSL2/SHDSL line. It is indexed by the ifIndex of the associated HDSL2/SHDSL line."

INDEX { ifIndex }

::= { hds12ShdslSpanStatusTable 1 }

Hds12ShdslSpanStatusEntry ::=

SEQUENCE

{

hds12ShdslStatusNumAvailRepeaters INTEGER,  
hds12ShdslStatusMaxAttainableLineRate Integer32,

```

    hds12ShdslStatusActualLineRate          Integer32,
    hds12ShdslStatusTransmissionModeCurrent
        Hds12ShdslTransmissionModeType
}

```

hds12ShdslStatusNumAvailRepeaters OBJECT-TYPE

```

SYNTAX      INTEGER
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION

```

"Contains the actual number of repeaters/regenerators  
discovered in this HDSL2/SHDSL span."

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```
 ::= { hds12ShdslSpanStatusEntry 1 }
```

hds12ShdslStatusMaxAttainableLineRate OBJECT-TYPE

```

SYNTAX      Integer32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION

```

"Contains the maximum attainable line rate in this HDSL2/SHDSL  
span."

```
 ::= { hds12ShdslSpanStatusEntry 2 }
```

hds12ShdslStatusActualLineRate OBJECT-TYPE

```

SYNTAX      Integer32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION

```

"Contains the actual line rate in this HDSL2/SHDSL span."

```
 ::= { hds12ShdslSpanStatusEntry 3 }
```

hds12ShdslStatusTransmissionModeCurrent OBJECT-TYPE

```

SYNTAX      Hds12ShdslTransmissionModeType
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION

```

"Contains the current PSD regional setting of the  
HDSL2/SHDSL span."

```
 ::= { hds12ShdslSpanStatusEntry 4 }
```

-- Unit Inventory Group

--

hds12ShdslInventoryTable OBJECT-TYPE

```

SYNTAX      SEQUENCE OF Hds12ShdslInventoryEntry
MAX-ACCESS  not-accessible

```

```

STATUS      current
DESCRIPTION
    "This table supports retrieval of unit inventory information
    available via the EOC from units in a HDSL2/SHDSL line."
::= { hdsl2ShdslMibObjects 3 }

```

#### hdsl2ShdslInventoryEntry OBJECT-TYPE

```

SYNTAX      Hdsl2ShdslInventoryEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "An entry in the hdsl2ShdslInventoryTable. Each entry
    represents inventory information for a single unit in a
    HDSL2/SHDSL line. It is indexed by the ifIndex of the
    HDSL2/SHDSL line and the Hdsl2ShdslUnitId of the
    associated unit."
INDEX { ifIndex, hdsl2ShdslInvIndex }
::= { hdsl2ShdslInventoryTable 1 }

```

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#### Hdsl2ShdslInventoryEntry ::=

```

SEQUENCE
{
    hdsl2ShdslInvIndex          Hdsl2ShdslUnitId,
    hdsl2ShdslInvVendorID      Integer32,
    hdsl2ShdslInvVendorModelNumber DisplayString,
    hdsl2ShdslInvVendorSerialNumber DisplayString,
    hdsl2ShdslInvVendorEOCSoftwareVersion Integer32,
    hdsl2ShdslInvStandardVersion Integer32,
    hdsl2ShdslInvVendorListNumber DisplayString,
    hdsl2ShdslInvVendorIssueNumber DisplayString,
    hdsl2ShdslInvVendorSoftwareVersion DisplayString,
    hdsl2ShdslInvEquipmentCode DisplayString,
    hdsl2ShdslInvVendorOther DisplayString,
    hdsl2ShdslInvTransmissionModeCapability
                                Hdsl2ShdslTransmissionModeType
}

```

#### hdsl2ShdslInvIndex OBJECT-TYPE

```

SYNTAX      Hdsl2ShdslUnitId
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The index into the hdsl2ShdslInventoryTable."
::= { hdsl2ShdslInventoryEntry 1 }

```

hdsl2ShdslInvVendorID OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Vendor ID as reported in an Inventory Response message."

::= { hdsl2ShdslInventoryEntry 2 }

hdsl2ShdslInvVendorModelNumber OBJECT-TYPE

SYNTAX DisplayString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Vendor model number as reported in an Inventory Response message."

::= { hdsl2ShdslInventoryEntry 3 }

hdsl2ShdslInvVendorSerialNumber OBJECT-TYPE

SYNTAX DisplayString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Vendor serial number as reported in an Inventory Response message."

::= { hdsl2ShdslInventoryEntry 4 }

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hdsl2ShdslInvVendorEOCSoftwareVersion OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Vendor EOC version as reported in an Inventory Response message."

::= { hdsl2ShdslInventoryEntry 5 }

hdsl2ShdslInvStandardVersion OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Version of the HDSL2/SHDSL standard implemented, as reported in an Inventory Response message."

::= { hdsl2ShdslInventoryEntry 6 }

hdsl2ShdslInvVendorListNumber OBJECT-TYPE

SYNTAX        DisplayString  
MAX-ACCESS   read-only  
STATUS        current  
DESCRIPTION  
    "Vendor list number as reported in an Inventory Response  
    message."  
 ::= { hds12ShdslInventoryEntry 7 }

hds12ShdslInvVendorIssueNumber OBJECT-TYPE

SYNTAX        DisplayString  
MAX-ACCESS   read-only  
STATUS        current  
DESCRIPTION  
    "Vendor issue number as reported in an Inventory Response  
    message."  
 ::= { hds12ShdslInventoryEntry 8 }

hds12ShdslInvVendorSoftwareVersion OBJECT-TYPE

SYNTAX        DisplayString  
MAX-ACCESS   read-only  
STATUS        current  
DESCRIPTION  
    "Vendor software version as reported in an Inventory  
    Response message."  
 ::= { hds12ShdslInventoryEntry 9 }

hds12ShdslInvEquipmentCode OBJECT-TYPE

SYNTAX        DisplayString  
MAX-ACCESS   read-only  
STATUS        current  
DESCRIPTION  
    "Equipment code conforming to ANSI T1.213, Coded Identification  
    of Equipment Entities."  
 ::= { hds12ShdslInventoryEntry 10 }

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hds12ShdslInvVendorOther OBJECT-TYPE

SYNTAX        DisplayString  
MAX-ACCESS   read-only  
STATUS        current  
DESCRIPTION  
    "Other vendor information as reported in an Inventory  
    Response message."  
 ::= { hds12ShdslInventoryEntry 11 }

hds12ShdslInvTransmissionModeCapability OBJECT-TYPE

SYNTAX        Hds12ShdslTransmissionModeType

```

MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "Contains the transmission mode capability of the SHDSL unit."
 ::= { hdsl2ShdslInventoryEntry 12 }

```

```

-- Segment Endpoint Configuration Group
--

```

```

hdlsl2ShdslEndpointConfTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Hdsl2ShdslEndpointConfEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "This table supports configuration parameters for segment
         endpoints in a HDSL2/SHDSL line."
    ::= { hdsl2ShdslMibObjects 4 }

```

```

hdlsl2ShdslEndpointConfEntry OBJECT-TYPE
    SYNTAX      Hdsl2ShdslEndpointConfEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "An entry in the hdsl2ShdslEndpointConfTable. Each entry
         represents a single segment endpoint in a HDSL2/SHDSL line.
         It is indexed by the ifIndex of the HDSL2/SHDSL line, the
         UnitId of the associated unit, the side of the unit, and the
         wire-pair of the associated modem."
    INDEX { ifIndex, hdsl2ShdslInvIndex, hdsl2ShdslEndpointSide,
            hdsl2ShdslEndpointWirePair }
    ::= { hdsl2ShdslEndpointConfTable 1 }

```

```

Hdsl2ShdslEndpointConfEntry ::=
    SEQUENCE
    {
        hdsl2ShdslEndpointSide          Hdsl2ShdslUnitSide,
        hdsl2ShdslEndpointWirePair      Hdsl2ShdslWirePair,
        hdsl2ShdslEndpointAlarmConfProfile SnmpAdminString
    }

```

```

hdlsl2ShdslEndpointSide OBJECT-TYPE
    SYNTAX      Hdsl2ShdslUnitSide
    MAX-ACCESS   read-only

```

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```

STATUS        current
DESCRIPTION
    "The side of the unit associated with this segment endpoint -

```



Network/Customer side - as per the Hdsl2ShdslUnitSide  
textual convention."  
::= { hdsl2ShdslEndpointConfEntry 1 }

hdsl2ShdslEndpointWirePair OBJECT-TYPE

SYNTAX Hdsl2ShdslWirePair

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The wire-pair of the modem associated with this segment  
endpoint as per the Hdsl2ShdslWirePair textual convention."

::= { hdsl2ShdslEndpointConfEntry 2 }

hdsl2ShdslEndpointAlarmConfProfile OBJECT-TYPE

SYNTAX SnmpAdminString (SIZE(1..32))

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This object configures the alarm threshold values to be  
used for this segment endpoint. The values are obtained  
from the alarm configuration profile referenced by this  
object. The value of this object is the index of the  
referenced profile in the hdsl2ShdslLineAlarmConfProfileTable,  
or NULL. If the value is NULL, the endpoint uses the  
default Alarm Configuration Profile for the associated  
span as per the hdsl2ShdslSpanAlarmConfProfile object in  
the hdsl2ShdslSpanConfTable. The default value of this  
object is NULL."

::= { hdsl2ShdslEndpointConfEntry 3 }

-- Segment Endpoint Current Status/Performance Group

--

hdsl2ShdslEndpointCurrTable OBJECT-TYPE

SYNTAX SEQUENCE OF Hdsl2ShdslEndpointCurrEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains current status and performance information  
for segment endpoints in HDSL2/SHDSL Lines."

::= { hdsl2ShdslMibObjects 5 }

hdsl2ShdslEndpointCurrEntry OBJECT-TYPE

SYNTAX Hdsl2ShdslEndpointCurrEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the hdsl2ShdslEndpointCurrTable. Each entry  
contains status and performance information relating to a  
single segment endpoint. It is indexed by the ifIndex of  
the HDSL2/SHDSL line, the UnitId of the associated unit,

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the side of the unit, and the wire-pair of the associated modem."

```
INDEX { ifIndex, hds12ShdslInvIndex, hds12ShdslEndpointSide,
        hds12ShdslEndpointWirePair}
 ::= { hds12ShdslEndpointCurrTable 1 }
```

Hds12ShdslEndpointCurrEntry ::=

```
SEQUENCE
{
  hds12ShdslEndpointCurrAtn                Integer32,
  hds12ShdslEndpointCurrSnrMgn             Integer32,
  hds12ShdslEndpointCurrStatus             Integer32,
  hds12ShdslEndpointES                     Counter32,
  hds12ShdslEndpointSES                     Counter32,
  hds12ShdslEndpointCRCAnomalies           Counter32,
  hds12ShdslEndpointLOSWS                  Counter32,
  hds12ShdslEndpointUAS                     Counter32,
  hds12ShdslEndpointCurr15MinTimeElapsedd  Hds12ShdslPerfTimeElapsedd,
  hds12ShdslEndpointCurr15MinES            PerfCurrentCount,
  hds12ShdslEndpointCurr15MinSES           PerfCurrentCount,
  hds12ShdslEndpointCurr15MinCRCAnomalies  PerfCurrentCount,
  hds12ShdslEndpointCurr15MinLOSWS         PerfCurrentCount,
  hds12ShdslEndpointCurr15MinUAS           PerfCurrentCount,
  hds12ShdslEndpointCurr1DayTimeElapsedd   Hds12ShdslPerfTimeElapsedd,
  hds12ShdslEndpointCurr1DayES             Hds12ShdslPerfCurrDayCount,
  hds12ShdslEndpointCurr1DaySES            Hds12ShdslPerfCurrDayCount,
  hds12ShdslEndpointCurr1DayCRCAnomalies   Hds12ShdslPerfCurrDayCount,
  hds12ShdslEndpointCurr1DayLOSWS          Hds12ShdslPerfCurrDayCount,
  hds12ShdslEndpointCurr1DayUAS            Hds12ShdslPerfCurrDayCount
}
```

hds12ShdslEndpointCurrAtn OBJECT-TYPE

```
SYNTAX      Integer32
UNITS       "dB"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
```

"The current loop attenuation for this endpoint as reported in a Network or Customer Side Performance Status message."

```
::= { hds12ShdslEndpointCurrEntry 1 }
```

hds12ShdslEndpointCurrSnrMgn OBJECT-TYPE

```
SYNTAX      Integer32
UNITS       "dB"
MAX-ACCESS  read-only
```

STATUS current

DESCRIPTION

"The current SNR margin for this endpoint as reported in a Status Response/SNR message."  
 ::= { hdsl2ShdslEndpointCurrEntry 2 }

hdsl2ShdslEndpointCurrStatus OBJECT-TYPE

SYNTAX Integer32

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MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Contains the current state of the endpoint. This is a bit-map of possible conditions. The various bit positions are:

1 noDefect	There no defects on the line
2 powerBackoff	Indicates enhanced Power Backoff
4 deviceFault	Indicates a vendor-dependent detection of diagnostics or self-test results
8 dcContinuityFault	Indicates vendor-dependent conditions that interfere with span powering such as short and open circuits
16 snrMarginAlarm	Indicates that the SNR margin has exceeded the alarm threshold
32 loopAttenuationAlarm	Indicates that the loop attenuation has exceeded the alarm threshold
64 loswFailureAlarm	Indicates a forward LOSW alarm
128 configInitFailure	Endpoint failure during initialization due to paired endpoint not able to support requested configuration
256 protocolInitFailure	Endpoint failure during initialization due to incompatible protocol used by the paired endpoint.
512 noNeighborPresent	Endpoint failure during initialization due to no activation sequence detected from paired endpoint.

1024 loopbackActive      A loopback is currently active at this  
Segment Endpoint.

This is intended to supplement ifOperStatus."  
 ::= { hdsl2ShdslEndpointCurrEntry 3 }

hdsl2ShdslEndpointES OBJECT-TYPE

SYNTAX          Counter32

UNITS           "seconds"

MAX-ACCESS    read-only

STATUS         current

DESCRIPTION

"Count of Errored Seconds (ES) on this endpoint since the xU  
was last restarted."

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::= { hdsl2ShdslEndpointCurrEntry 4 }

hdsl2ShdslEndpointSES OBJECT-TYPE

SYNTAX          Counter32

UNITS           "seconds"

MAX-ACCESS    read-only

STATUS         current

DESCRIPTION

"Count of Severely Errored Seconds (SES) on this endpoint  
since the xU was last restarted."

::= { hdsl2ShdslEndpointCurrEntry 5 }

hdsl2ShdslEndpointCRCAnomalies OBJECT-TYPE

SYNTAX          Counter32

MAX-ACCESS    read-only

STATUS         current

DESCRIPTION

"Count of CRC anomalies on this endpoint since the xU was  
last restarted."

::= { hdsl2ShdslEndpointCurrEntry 6 }

hdsl2ShdslEndpointLOSWS OBJECT-TYPE

SYNTAX          Counter32

UNITS           "seconds"

MAX-ACCESS    read-only

STATUS         current

DESCRIPTION

"Count of Loss of Sync Word (LOSWS) Seconds on this endpoint  
since the xU was last restarted."

::= { hdsl2ShdslEndpointCurrEntry 7 }

hdsl2ShdslEndpointUAS OBJECT-TYPE

SYNTAX Counter32  
 UNITS "seconds"  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
   "Count of Unavailable Seconds (UAS) on this endpoint since  
   the xU was last restarted."  
 ::= { hds12ShdslEndpointCurrEntry 8 }

#### hds12ShdslEndpointCurr15MinTimeElapsed OBJECT-TYPE

SYNTAX Hds12ShdslPerfTimeElapsed  
 UNITS "seconds"  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
   "Total elapsed seconds in the current 15-minute interval."  
 ::= { hds12ShdslEndpointCurrEntry 9 }

#### hds12ShdslEndpointCurr15MinES OBJECT-TYPE

SYNTAX PerfCurrentCount  
 UNITS "seconds"  
 MAX-ACCESS read-only

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STATUS current  
 DESCRIPTION  
   "Count of Errored Seconds (ES) in the current 15-minute  
   interval."  
 ::= { hds12ShdslEndpointCurrEntry 10 }

#### hds12ShdslEndpointCurr15MinSES OBJECT-TYPE

SYNTAX PerfCurrentCount  
 UNITS "seconds"  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
   "Count of Severely Errored Seconds (SES) in the current  
   15-minute interval."  
 ::= { hds12ShdslEndpointCurrEntry 11 }

#### hds12ShdslEndpointCurr15MinCRCAnomalies OBJECT-TYPE

SYNTAX PerfCurrentCount  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
   "Count of CRC anomalies in the current 15-minute interval."  
 ::= { hds12ShdslEndpointCurrEntry 12 }

hdsl2ShdslEndpointCurr15MinLOSW OBJECT-TYPE

SYNTAX PerfCurrentCount

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of Loss of Sync Word (LOSW) Seconds in the current 15-minute interval."

::= { hdsl2ShdslEndpointCurrEntry 13 }

hdsl2ShdslEndpointCurr15MinUAS OBJECT-TYPE

SYNTAX PerfCurrentCount

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of Unavailable Seconds (UAS) in the current 15-minute interval."

::= { hdsl2ShdslEndpointCurrEntry 14 }

hdsl2ShdslEndpointCurr1DayTimeElapsed OBJECT-TYPE

SYNTAX Hdsl2ShdslPerfTimeElapsed

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of seconds that have elapsed since the beginning of the current 1-day interval."

::= { hdsl2ShdslEndpointCurrEntry 15 }

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hdsl2ShdslEndpointCurr1DayES OBJECT-TYPE

SYNTAX Hdsl2ShdslPerfCurrDayCount

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of Errored Seconds (ES) during the current day as measured by hdslPerfCurr1DayTimeElapsed."

::= { hdsl2ShdslEndpointCurrEntry 16 }

hdsl2ShdslEndpointCurr1DaySES OBJECT-TYPE

SYNTAX Hdsl2ShdslPerfCurrDayCount

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

```
    "Count of Severely Errored Seconds (SES) during the current
    day as measured by hds1PerfCurr1DayTimeElapsed."
 ::= { hds12Shds1EndpointCurrEntry 17 }
```

hds12Shds1EndpointCurr1DayCRCAnomalies OBJECT-TYPE

```
SYNTAX      Hds12Shds1PerfCurrDayCount
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Count of CRC anomalies during the current day as measured
    by hds1PerfCurr1DayTimeElapsed."
 ::= { hds12Shds1EndpointCurrEntry 18 }
```

hds12Shds1EndpointCurr1DayLOSWS OBJECT-TYPE

```
SYNTAX      Hds12Shds1PerfCurrDayCount
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Count of Loss of Sync Word Seconds (LOSWS) during the
    current day as measured by hds1PerfCurr1DayTimeElapsed."
 ::= { hds12Shds1EndpointCurrEntry 19 }
```

hds12Shds1EndpointCurr1DayUAS OBJECT-TYPE

```
SYNTAX      Hds12Shds1PerfCurrDayCount
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Count of Unavailable Seconds (UAS) during the current
    day as measured by hds1PerfCurr1DayTimeElapsed."
 ::= { hds12Shds1EndpointCurrEntry 20 }
```

```
-- Segment Endpoint 15-Minute Interval Status/Performance Group
--
```

hds12Shds115MinIntervalTable OBJECT-TYPE

```
SYNTAX      SEQUENCE OF Hds12Shds115MinIntervalEntry
```

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```
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This table provides one row for each HDSL2/SHDSL endpoint
    performance data collection interval."
 ::= { hds12Shds1MibObjects 6 }
```

hds12Shds115MinIntervalEntry OBJECT-TYPE

```

SYNTAX      Hdsl2Shdsl15MinIntervalEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "An entry in the hdsl2Shdsl15MinIntervalTable."
INDEX { ifIndex, hdsl2ShdslInvIndex, hdsl2ShdslEndpointSide,
        hdsl2ShdslEndpointWirePair, hdsl2Shdsl15MinIntervalNumber}
 ::= { hdsl2Shdsl15MinIntervalTable 1 }

```

```

Hdsl2Shdsl15MinIntervalEntry ::=
SEQUENCE
{
    hdsl2Shdsl15MinIntervalNumber      INTEGER,
    hdsl2Shdsl15MinIntervalES          PerfIntervalCount,
    hdsl2Shdsl15MinIntervalSES          PerfIntervalCount,
    hdsl2Shdsl15MinIntervalCRCAnomalies PerfIntervalCount,
    hdsl2Shdsl15MinIntervalLOSWS        PerfIntervalCount,
    hdsl2Shdsl15MinIntervalUAS          PerfIntervalCount
}

```

```

hdsl2Shdsl15MinIntervalNumber OBJECT-TYPE
SYNTAX      INTEGER(1..96)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Performance Data Interval number. 1 is the the most recent
    previous interval; interval 96 is 24 hours ago. Intervals
    2..96 are optional."
 ::= { hdsl2Shdsl15MinIntervalEntry 1 }

```

```

hdsl2Shdsl15MinIntervalES OBJECT-TYPE
SYNTAX      PerfIntervalCount
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Count of Errored Seconds (ES) during the interval."
 ::= { hdsl2Shdsl15MinIntervalEntry 2 }

```

```

hdsl2Shdsl15MinIntervalSES OBJECT-TYPE
SYNTAX      PerfIntervalCount
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION

```



```

        "Count of Severely Errored Seconds (SES) during the
        interval."
 ::= { hdsl2Shdsl15MinIntervalEntry 3 }

hdsl2Shdsl15MinIntervalCRCAnomalies OBJECT-TYPE
    SYNTAX      PerfIntervalCount
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Count of CRC anomalies during the interval."
 ::= { hdsl2Shdsl15MinIntervalEntry 4 }

hdsl2Shdsl15MinIntervalLOSWS OBJECT-TYPE
    SYNTAX      PerfIntervalCount
    UNITS        "seconds"
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Count of Loss of Sync Word (LOSW) Seconds during the interval."
 ::= { hdsl2Shdsl15MinIntervalEntry 5 }

hdsl2Shdsl15MinIntervalUAS OBJECT-TYPE
    SYNTAX      PerfIntervalCount
    UNITS        "seconds"
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Count of Unavailable Seconds (UAS) during the interval."
 ::= { hdsl2Shdsl15MinIntervalEntry 6 }

-- Segment Endpoint 1-Day Interval Status/Performance Group
--

hdsl2Shdsl1DayIntervalTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Hdsl2Shdsl1DayIntervalEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "This table provides one row for each HDSL2/SHDSL endpoint
        performance data collection interval."
 ::= { hdsl2ShdslMibObjects 7 }

hdsl2Shdsl1DayIntervalEntry OBJECT-TYPE
    SYNTAX      Hdsl2Shdsl1DayIntervalEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "An entry in the hdsl2Shdsl1DayIntervalTable."
    INDEX { ifIndex, hdsl2ShdslInvIndex, hdsl2ShdslEndpointSide,
            hdsl2ShdslEndpointWirePair, hdsl2Shdsl1DayIntervalInterval }
 ::= { hdsl2Shdsl1DayIntervalTable 1 }

```

Hdsl2Shdsl1DayIntervalEntry ::=

SEQUENCE

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```
{
  hdsl2Shdsl1DayIntervalInterval      INTEGER,
  hdsl2Shdsl1DayIntervalMoniSecs      Hdsl2ShdslPerfTimeElapsed,
  hdsl2Shdsl1DayIntervalES            Hdsl2Shdsl1DayIntervalCount,
  hdsl2Shdsl1DayIntervalSES            Hdsl2Shdsl1DayIntervalCount,
  hdsl2Shdsl1DayIntervalCRCAnomalies  Hdsl2Shdsl1DayIntervalCount,
  hdsl2Shdsl1DayIntervalLOSWS         Hdsl2Shdsl1DayIntervalCount,
  hdsl2Shdsl1DayIntervalUAS           Hdsl2Shdsl1DayIntervalCount
}
```

hdsl2Shdsl1DayIntervalInterval OBJECT-TYPE

SYNTAX INTEGER(1..30)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"History Data Interval number. Interval 1 is the the most recent previous day; interval 30 is 30 days ago. Intervals 2..30 are optional."

::= { hdsl2Shdsl1DayIntervalEntry 1 }

hdsl2Shdsl1DayIntervalMoniSecs OBJECT-TYPE

SYNTAX Hdsl2ShdslPerfTimeElapsed

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The amount of time in the 1-day interval over which the performance monitoring information is actually counted. This value will be the same as the interval duration except in a situation where performance monitoring data could not be collected for any reason."

::= { hdsl2Shdsl1DayIntervalEntry 2 }

hdsl2Shdsl1DayIntervalES OBJECT-TYPE

SYNTAX Hdsl2Shdsl1DayIntervalCount

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of Errored Seconds (ES) during the 1-day interval as measured by hdsl2Shdsl1DayIntervalMoniSecs."

::= { hdsl2Shdsl1DayIntervalEntry 3 }

hdsl2Shdsl1DayIntervalSES OBJECT-TYPE

SYNTAX           Hdsl2Shdsl1DayIntervalCount  
 UNITS            "seconds"  
 MAX-ACCESS       read-only  
 STATUS           current  
 DESCRIPTION  
     "Count of Severely Errored Seconds (SES) during the 1-day  
     interval as measured by hds12Shdsl1DayIntervalMoniSecs."  
 ::= { hds12Shdsl1DayIntervalEntry 4 }

hds12Shdsl1DayIntervalCRCAnomalies OBJECT-TYPE

SYNTAX           Hdsl2Shdsl1DayIntervalCount

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MAX-ACCESS       read-only  
 STATUS           current  
 DESCRIPTION  
     "Count of CRC anomalies during the 1-day interval as  
     measured by hds12Shdsl1DayIntervalMoniSecs."  
 ::= { hds12Shdsl1DayIntervalEntry 5 }

hds12Shdsl1DayIntervalLOSWS OBJECT-TYPE

SYNTAX           Hdsl2Shdsl1DayIntervalCount  
 UNITS            "seconds"  
 MAX-ACCESS       read-only  
 STATUS           current  
 DESCRIPTION  
     "Count of Loss of Sync Word (LOSW) Seconds during the 1-day  
     interval as measured by hds12Shdsl1DayIntervalMoniSecs."  
 ::= { hds12Shdsl1DayIntervalEntry 6 }

hds12Shdsl1DayIntervalUAS OBJECT-TYPE

SYNTAX           Hdsl2Shdsl1DayIntervalCount  
 MAX-ACCESS       read-only  
 STATUS           current  
 DESCRIPTION  
     "Count of Unavailable Seconds (UAS) during the 1-day interval  
     as measured by hds12Shdsl1DayIntervalMoniSecs."  
 ::= { hds12Shdsl1DayIntervalEntry 7 }

-- Maintenance Group

--

hds12ShdslEndpointMaintTable OBJECT-TYPE

SYNTAX           SEQUENCE OF Hds12ShdslEndpointMaintEntry  
 MAX-ACCESS       not-accessible  
 STATUS           current  
 DESCRIPTION  
     "This table supports maintenance operations (eg. loopbacks)

to be performed on HDLSL2/SHDSL segment endpoints."  
 ::= { hds12ShdslMibObjects 8 }

hds12ShdslEndpointMaintEntry OBJECT-TYPE

SYNTAX Hds12ShdslEndpointMaintEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the hds12ShdslEndpointMaintTable. Each entry corresponds to a single segment endpoint, and is indexed by the ifIndex of the HDLSL2/SHDSL line, the UnitId of the associated unit and the side of the unit."

INDEX { ifIndex, hds12ShdslInvIndex, hds12ShdslEndpointSide }

::= { hds12ShdslEndpointMaintTable 1 }

Hds12ShdslEndpointMaintEntry ::=

SEQUENCE

{  
 hds12ShdslMaintLoopbackConfig INTEGER,

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hds12ShdslMaintTipRingReversal INTEGER,  
 hds12ShdslMaintPowerBackOff INTEGER,  
 hds12ShdslMaintSoftRestart INTEGER  
 }

hds12ShdslMaintLoopbackConfig OBJECT-TYPE

SYNTAX INTEGER

{  
 noLoopback(1),  
 normalLoopback(2),  
 specialLoopback(3)  
 }

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This object controls configuration of loopbacks for the associated segment endpoint. The status of the loopback is obtained via the hds12ShdslEndpointCurrStatus object."

::= { hds12ShdslEndpointMaintEntry 1 }

hds12ShdslMaintTipRingReversal OBJECT-TYPE

SYNTAX INTEGER

{  
 normal(1),  
 reversed(2)  
 }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object indicates the state of the tip/ring pair at the associated segment endpoint."

::= { hds12ShdslEndpointMaintEntry 2 }

hds12ShdslMaintPowerBackOff OBJECT-TYPE

SYNTAX INTEGER

{  
default(1),  
enhanced(2)  
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This object configures the receiver at the associated segment endpoint to operate in default or enhanced power backoff mode."

::= { hds12ShdslEndpointMaintEntry 3 }

hds12ShdslMaintSoftRestart OBJECT-TYPE

SYNTAX INTEGER

{  
ready(1),  
restart(2)  
}

MAX-ACCESS read-write

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STATUS current

DESCRIPTION

"This object enables the manager to trigger a soft restart of the modem at the associated segment endpoint. The manager may only set this object to the 'restart(2)' value to initiate a restart. The agent will perform a restart after approximately 5 seconds, and restore the object to the 'ready(1)' state."

::= { hds12ShdslEndpointMaintEntry 4 }

hds12ShdslUnitMaintTable OBJECT-TYPE

SYNTAX SEQUENCE OF Hds12ShdslUnitMaintEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table supports maintenance operations for units in a HDSL2/SHDSL line."

::= { hds12ShdslMibObjects 9 }

hds12ShdslUnitMaintEntry OBJECT-TYPE

```

SYNTAX      Hdsl2ShdslUnitMaintEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "An entry in the hdsl2ShdslUnitMaintTable. Each entry
    corresponds to a single unit, and is indexed by the
    ifIndex of the HDLSL2/SHDSL line and the UnitId of the
    associated unit."
INDEX { ifIndex, hdsl2ShdslInvIndex }
 ::= { hdsl2ShdslUnitMaintTable 1 }

```

```

Hdsl2ShdslUnitMaintEntry ::=
    SEQUENCE
    {
        hdsl2ShdslMaintLoopbackTimeout      Integer32,
        hdsl2ShdslMaintUnitPowerSource      INTEGER
    }

```

```

hdsl2ShdslMaintLoopbackTimeout OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This object configures the timeout value for loopbacks
        initiated at segments endpoints contained in the associated
        unit. A value of 0 disables the timeout."
    ::= { hdsl2ShdslUnitMaintEntry 1 }

```

```

hdsl2ShdslMaintUnitPowerSource OBJECT-TYPE
    SYNTAX      INTEGER
                {
                    local(1),
                    span(2)
                }
    MAX-ACCESS  read-only

```

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```

STATUS      current
DESCRIPTION
    "This object indicates the DC power source being used by the
    associated unit."
 ::= { hdsl2ShdslUnitMaintEntry 2 }

```

```

-- Span Configuration Profile Group
--

```

```

hdsl2ShdslSpanConfProfileTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Hdsl2ShdslSpanConfProfileEntry

```

```

MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
    "This table supports definitions of span configuration
    profiles for SHDSL lines.  HDSL2 does not support these
    configuration options."
 ::= { hdsl2ShdslMibObjects 10 }

```

```

hdlsl2ShdslSpanConfProfileEntry OBJECT-TYPE
    SYNTAX      Hdsl2ShdslSpanConfProfileEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each entry corresponds to a single span configuration
        profile.  Each profile contains a set of span configuration
        parameters.  The configuration parameters in a profile are
        applied to those lines referencing that profile (see the
        hdsl2ShdslSpanConfProfile object).  Profiles may be
        created/deleted using the row creation/deletion mechanism
        via hdsl2ShdslSpanConfProfileRowStatus.  Profiles that are
        being referenced may not be deleted."
    INDEX { IMPLIED hdsl2ShdslSpanConfProfileName }
    ::= { hdsl2ShdslSpanConfProfileTable 1 }

```

```

Hdsl2ShdslSpanConfProfileEntry ::=
    SEQUENCE
    {
        hdsl2ShdslSpanConfProfileName      SnmpAdminString,
        hdsl2ShdslSpanWireInterface        INTEGER,
        hdsl2ShdslSpanMinLineRate          Integer32,
        hdsl2ShdslSpanMaxLineRate          Integer32,
        hdsl2ShdslSpanConfPSD              INTEGER,
        hdsl2ShdslSpanConfTransmissionMode Hdsl2ShdslTransmissionModeType,
        hdsl2ShdslSpanRemoteEnabled        INTEGER,
        hdsl2ShdslSpanPowerFeeding         INTEGER,
        hdsl2ShdslSpanConfProfileRowStatus RowStatus
    }

```

```

hdlsl2ShdslSpanConfProfileName OBJECT-TYPE
    SYNTAX      SnmpAdminString (SIZE(1..32))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION

```

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```

    "This object is the unique index associated with this profile."
    ::= { hdsl2ShdslSpanConfProfileEntry 1 }

```

#### hdl2ShdslSpanWireInterface OBJECT-TYPE

SYNTAX INTEGER  
    {  
        twoWire(1),  
        fourWire(2)  
    }  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
    "This object configures the two-wire or optional four-wire  
    operation for SHDSL Lines."  
 ::= { hdl2ShdslSpanConfProfileEntry 2 }

#### hdl2ShdslSpanMinLineRate OBJECT-TYPE

SYNTAX Integer32  
UNITS "bps"  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
    "This object configures the minimum transmission rate for  
    the associated SHDSL Line in bits-per-second (bps). If  
    the minimum line rate equals the maximum line rate  
    (hdl2ShdslSpanMaxLineRate), the line rate is considered  
    'fixed'. If the minimum line rate is less than the maximum  
    line rate, the line rate is considered 'rate-adaptive'.  
 ::= { hdl2ShdslSpanConfProfileEntry 3 }

#### hdl2ShdslSpanMaxLineRate OBJECT-TYPE

SYNTAX Integer32  
UNITS "bps"  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
    "This object configures the maximum transmission rate for  
    the associated SHDSL Line in bits-per-second (bps). If  
    the minimum line rate equals the maximum line rate  
    (hdl2ShdslSpanMaxLineRate), the line rate is considered  
    'fixed'. If the minimum line rate is less than the maximum  
    line rate, the line rate is considered 'rate-adaptive'.  
 ::= { hdl2ShdslSpanConfProfileEntry 4 }

#### hdl2ShdslSpanConfPSD OBJECT-TYPE

SYNTAX INTEGER  
    {  
        symmetric(1),  
        asymmetric(2)  
    }  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
    "This object configures use of symmetric/asymmetric PSD (Power



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Spectral Density) Mask for the associated SHDSL Line. Support for symmetric PSD is mandatory for all supported data rates. Support for asymmetric PSD is optional."

::= { hds12Shds1SpanConfProfileEntry 5 }

hds12Shds1SpanConfTransmissionMode OBJECT-TYPE

SYNTAX Hds12Shds1TransmissionModeType

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object specifies the regional setting for the SHDSL line."

::= { hds12Shds1SpanConfProfileEntry 6 }

hds12Shds1SpanRemoteEnabled OBJECT-TYPE

SYNTAX INTEGER

{  
enabled(1),  
disabled(2)  
}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object enables/disables support for remote management of the units in a SHDSL line from the STU-R via the EOC."

::= { hds12Shds1SpanConfProfileEntry 7 }

hds12Shds1SpanPowerFeeding OBJECT-TYPE

SYNTAX INTEGER

{  
noPower(1),  
powerFeed(2),  
wettingCurrent(3)  
}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object enables/disables support for optional power feeding in a SHDSL line."

::= { hds12Shds1SpanConfProfileEntry 8 }

hds12Shds1SpanConfProfileRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object controls creation/deletion of the associated entry in this table per the semantics of RowStatus."  
 ::= { hdsl2ShdslSpanConfProfileEntry 9 }

-- Segment Endpoint Alarm Configuration Profile group  
--

hdsl2ShdslEndpointAlarmConfProfileTable OBJECT-TYPE

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SYNTAX SEQUENCE OF Hdsl2ShdslEndpointAlarmConfProfileEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
 "This table supports definitions of alarm configuration profiles for HDSL2/SHDSL segment endpoints."  
 ::= { hdsl2ShdslMibObjects 11 }

hdsl2ShdslEndpointAlarmConfProfileEntry OBJECT-TYPE

SYNTAX Hdsl2ShdslEndpointAlarmConfProfileEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
 "Each entry corresponds to a single alarm configuration profile. Each profile contains a set of parameters for setting alarm thresholds for various performance attributes monitored at HDSL2/SHDSL segment endpoints. Profiles may be created/deleted using the row creation/deletion mechanism via hdsl2ShdslEndpointAlarmConfProfileRowStatus. Profiles that are being referenced may not be deleted."  
 INDEX { IMPLIED hdsl2ShdslEndpointAlarmConfProfileName }  
 ::= { hdsl2ShdslEndpointAlarmConfProfileTable 1 }

Hdsl2ShdslEndpointAlarmConfProfileEntry ::=

SEQUENCE  
 {  
 hdsl2ShdslEndpointAlarmConfProfileName SnmpAdminString,  
 hdsl2ShdslEndpointThreshLoopAttenuation Integer32,  
 hdsl2ShdslEndpointThreshSNRMargin Integer32,  
 hdsl2ShdslEndpointThreshES  
 Hdsl2ShdslPerfIntervalThreshold,  
 hdsl2ShdslEndpointThreshSES  
 Hdsl2ShdslPerfIntervalThreshold,  
 hdsl2ShdslEndpointThreshCRCAnomalies Integer32,  
 hdsl2ShdslEndpointThreshLOSWS  
 Hdsl2ShdslPerfIntervalThreshold,  
 hdsl2ShdslEndpointThreshUAS  
 Hdsl2ShdslPerfIntervalThreshold,  
 }

```
hds12ShdslEndpointAlarmConfProfileRowStatus RowStatus
}
```

hds12ShdslEndpointAlarmConfProfileName OBJECT-TYPE

SYNTAX SnmpAdminString (SIZE(1..32))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object is the unique index associated with this profile."

::= { hds12ShdslEndpointAlarmConfProfileEntry 1 }

hds12ShdslEndpointThreshLoopAttenuation OBJECT-TYPE

SYNTAX Integer32

UNITS "dB"

MAX-ACCESS read-create

STATUS current

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DESCRIPTION

"This object configures the loop attenuation alarm threshold.

When the current value reaches/exceeds this threshold, a

hds12ShdslLoopAttenCrossingTrap will be generated."

::= { hds12ShdslEndpointAlarmConfProfileEntry 2 }

hds12ShdslEndpointThreshSNRMargin OBJECT-TYPE

SYNTAX Integer32

UNITS "dB"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object configures the SNR margin alarm threshold.

When the current value reaches/exceeds this threshold, a

hds12ShdslSNRMarginCrossingTrap will be generated."

::= { hds12ShdslEndpointAlarmConfProfileEntry 3 }

hds12ShdslEndpointThreshES OBJECT-TYPE

SYNTAX Hds12ShdslPerfIntervalThreshold

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object configures the threshold for the number of errored seconds (ES) within any given 15-minute performance data collection interval. If the value of errored seconds in a particular 15-minute collection interval reaches/exceeds this value, a hds12ShdslPerfESThreshTrap will be generated. One trap will be sent per interval per endpoint."

```
::= { hds12Shds1EndpointAlarmConfProfileEntry 4 }
```

#### hds12Shds1EndpointThreshSES OBJECT-TYPE

SYNTAX Hds12Shds1PerfIntervalThreshold

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

##### DESCRIPTION

"This object configures the threshold for the number of severely errored seconds (SES) within any given 15-minute performance data collection interval. If the value of severely errored seconds in a particular 15-minute collection interval reaches/exceeds this value, a hds12Shds1PerfSESThreshTrap will be generated. One trap will be sent per interval per endpoint."

```
::= { hds12Shds1EndpointAlarmConfProfileEntry 5 }
```

#### hds12Shds1EndpointThreshCRCAnomalies OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-create

STATUS current

##### DESCRIPTION

"This object configures the threshold for the number of CRC anomalies within any given 15-minute performance data collection interval. If the value of CRC anomalies in a

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particular 15-minute collection interval reaches/exceeds this value, a hds12Shds1PerfCRCAnomaliesThreshTrap will be generated. One trap will be sent per interval per endpoint."

```
::= { hds12Shds1EndpointAlarmConfProfileEntry 6 }
```

#### hds12Shds1EndpointThreshLOSWS OBJECT-TYPE

SYNTAX Hds12Shds1PerfIntervalThreshold

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

##### DESCRIPTION

"This object configures the threshold for the number of loss of sync word seconds (LOSWS) within any given 15-minute performance data collection interval. If the value of LOSWS in a particular 15-minute collection interval reaches/exceeds this value, a hds12Shds1PerfLOSWSThreshTrap will be generated. One trap will be sent per interval per endpoint."

```
::= { hds12Shds1EndpointAlarmConfProfileEntry 7 }
```

#### hds12Shds1EndpointThreshUAS OBJECT-TYPE

SYNTAX Hds12Shds1PerfIntervalThreshold

UNITS "seconds"

```

MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    "This object configures the threshold for the number of
    unavailable seconds (UAS) within any given 15-minute
    performance data collection interval.  If the value of UAS
    in a particular 15-minute collection interval reaches/exceeds
    this value, a hds12ShdslPerfUASThreshTrap will be generated.
    One trap will be sent per interval per endpoint."
 ::= { hds12ShdslEndpointAlarmConfProfileEntry 8 }

```

hds12ShdslEndpointAlarmConfProfileRowStatus OBJECT-TYPE

```

SYNTAX        RowStatus
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    "This object controls creation/deletion of the associated
    entry in this table as per the semantics of RowStatus."
 ::= { hds12ShdslEndpointAlarmConfProfileEntry 9 }

```

```

-- Notifications Group
--

```

```

hds12ShdslTraps OBJECT IDENTIFIER      ::= { hds12ShdslLineMib 2 }
hds12ShdslTrapsPrefix OBJECT IDENTIFIER ::= { hds12ShdslTraps 0 }

```

hds12ShdslLoopAttenCrossingTrap NOTIFICATION-TYPE

```

OBJECTS
{
    ifIndex,
    hds12ShdslInvIndex,
    hds12ShdslEndpointSide,

```

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```

hds12ShdslEndpointWirePair,
hds12ShdslEndpointCurrAtn,
hds12ShdslEndpointThreshLoopAttenuation
}

```

STATUS current

DESCRIPTION

"This trap indicates that the loop attenuation threshold (as per the hds12ShdslEndpointThreshLoopAttenuation value) has been reached/exceeded for the HDSL2/SHDSL segment endpoint identified by the ifIndex, hds12ShdslInvIndex, hds12ShdslEndpointSide, and hds12ShdslEndpointWirePair values."

```

 ::= { hds12ShdslTrapsPrefix 1 }

```

hds12ShdslSNRMarginCrossingTrap NOTIFICATION-TYPE

#### OBJECTS

```
{
  ifIndex,
  hds12Shds1InvIndex,
  hds12Shds1EndpointSide,
  hds12Shds1EndpointWirePair,
  hds12Shds1EndpointCurrSnrMgn,
  hds12Shds1EndpointThreshSNRMargin
}
```

STATUS        current

#### DESCRIPTION

"This trap indicates that the SNR margin threshold (as per the hds12Shds1EndpointThreshSNRMargin value) has been reached/exceeded for the HDSL2/SHDSL segment endpoint identified by the ifIndex, hds12Shds1InvIndex, hds12Shds1EndpointSide, and hds12Shds1EndpointWirePair values."

::= { hds12Shds1TrapsPrefix 2 }

#### hds12Shds1PerfESThreshTrap NOTIFICATION-TYPE

##### OBJECTS

```
{
  ifIndex,
  hds12Shds1InvIndex,
  hds12Shds1EndpointSide,
  hds12Shds1EndpointWirePair,
  hds12Shds1EndpointCurr15MinES,
  hds12Shds1EndpointThreshES
}
```

STATUS        current

##### DESCRIPTION

"This trap indicates that the errored seconds threshold (as per the hds12Shds1EndpointThreshES value) has been reached/exceeded for the HDSL2/SHDSL segment endpoint identified by the ifIndex, hds12Shds1InvIndex, hds12Shds1EndpointSide, and hds12Shds1EndpointWirePair values."

::= { hds12Shds1TrapsPrefix 3 }

#### hds12Shds1PerfSESThreshTrap NOTIFICATION-TYPE

##### OBJECTS

```
{
```

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```
  ifIndex,
  hds12Shds1InvIndex,
  hds12Shds1EndpointSide,
  hds12Shds1EndpointWirePair,
  hds12Shds1EndpointCurr15MinSES,
  hds12Shds1EndpointThreshSES
```

```

}
STATUS      current
DESCRIPTION
    "This trap indicates that the severely errored seconds threshold
    (as per the hds12ShdslEndpointThreshSES value) has been reached/
    exceeded for the HDSL2/SHDSL Segment Endpoint identified by the
    ifIndex, hds12ShdslInvIndex, hds12ShdslEndpointSide, and
    hds12ShdslEndpointWirePair values."
::= { hds12ShdslTrapsPrefix 4 }

```

#### hds12ShdslPerfCRCAnomaliesThreshTrap NOTIFICATION-TYPE

```

OBJECTS
{
ifIndex,
hds12ShdslInvIndex,
hds12ShdslEndpointSide,
hds12ShdslEndpointWirePair,
hds12ShdslEndpointCurr15MinCRCAnomalies,
hds12ShdslEndpointThreshCRCAnomalies
}
STATUS      current
DESCRIPTION
    "This trap indicates that the CRC anomalies threshold (as
    per the hds12ShdslEndpointThreshCRCAnomalies value) has been
    reached/exceeded for the HDSL2/SHDSL Segment Endpoint identified
    by the ifIndex, hds12ShdslInvIndex, hds12ShdslEndpointSide, and
    hds12ShdslEndpointWirePair values."
::= { hds12ShdslTrapsPrefix 5 }

```

#### hds12ShdslPerfLOSWSThreshTrap NOTIFICATION-TYPE

```

OBJECTS
{
ifIndex,
hds12ShdslInvIndex,
hds12ShdslEndpointSide,
hds12ShdslEndpointWirePair,
hds12ShdslEndpointCurr15MinLOSWS,
hds12ShdslEndpointThreshLOSWS
}
STATUS      current
DESCRIPTION
    "This trap indicates that the LOSW seconds threshold (as per the
    hds12ShdslEndpointThreshLOSWS value) has been reached/exceeded
    for the HDSL2/SHDSL segment endpoint identified by the ifIndex,
    hds12ShdslInvIndex, hds12ShdslEndpointSide, and
    hds12ShdslEndpointWirePair values."
::= { hds12ShdslTrapsPrefix 6 }

```

## hdsl2ShdslPerfUASThreshTrap NOTIFICATION-TYPE

## OBJECTS

```
{
  ifIndex,
  hdsl2ShdslInvIndex,
  hdsl2ShdslEndpointSide,
  hdsl2ShdslEndpointWirePair,
  hdsl2ShdslEndpointCurr15MinUAS,
  hdsl2ShdslEndpointThreshUAS
}
```

STATUS current

## DESCRIPTION

"This trap indicates that the unavailable seconds threshold (as per the hdsl2ShdslEndpointThreshUAS value) has been reached/exceeded for the HDSL2/SHDSL segment endpoint identified by the ifIndex, hdsl2ShdslInvIndex, hdsl2ShdslEndpointSide, and hdsl2ShdslEndpointWirePair values."

::= { hdsl2ShdslTrapsPrefix 7 }

## hdsl2ShdslSpanInvalidNumRepeaters NOTIFICATION-TYPE

## OBJECTS

```
{
  ifIndex,
  hdsl2ShdslConfNumRepeaters
}
```

STATUS current

## DESCRIPTION

"This trap indicates that a mismatch has been detected between the number of repeater/regenerator units configured for a HDSL2/SHDSL line via the hdsl2ShdslConfNumRepeaters object and the actual number of repeater/regenerator units discovered via the EOC."

::= { hdsl2ShdslTrapsPrefix 8 }

## hdsl2ShdslLoopbackFailure NOTIFICATION-TYPE

## OBJECTS

```
{
  ifIndex,
  hdsl2ShdslInvIndex,
  hdsl2ShdslEndpointSide,
  hdsl2ShdslMaintLoopbackConfig
}
```

STATUS current

## DESCRIPTION

"This trap indicates that an endpoint maintenance loopback command failed for an HDSL2/SHDSL segment."

::= { hdsl2ShdslTrapsPrefix 9 }

-- conformance information



--

```
hdsl2ShdslConformance OBJECT IDENTIFIER ::= { hdsl2ShdslLineMib 3 }
hdsl2ShdslGroups       OBJECT IDENTIFIER ::= { hdsl2ShdslConformance 1 }
hdsl2ShdslCompliances  OBJECT IDENTIFIER ::= { hdsl2ShdslConformance 2 }
```

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-- agent compliance statements

hdsl2ShdslLineMibCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The section outlines compliance requirements for this MIB."

MODULE

MANDATORY-GROUPS

```
{
hdsl2ShdslSpanConfGroup,
hdsl2ShdslSpanStatusGroup,
hdsl2ShdslInventoryGroup,
hdsl2ShdslEndpointConfGroup,
hdsl2ShdslEndpointCurrGroup,
hdsl2Shdsl15MinIntervalGroup,
hdsl2Shdsl1DayIntervalGroup,
hdsl2ShdslMaintenanceGroup,
hdsl2ShdslEndpointAlarmConfGroup,
hdsl2ShdslNotificationGroup
}
```

GROUP hdsl2ShdslInventoryShdslGroup

DESCRIPTION

"Support for this group is only required for implementations supporting SHDSL lines."

GROUP hdsl2ShdslSpanShdslStatusGroup

DESCRIPTION

"Support for this group is only required for implementations supporting SHDSL lines."

GROUP hdsl2ShdslSpanConfProfileGroup

DESCRIPTION

"Support for this group is only required for implementations supporting SHDSL lines."

::= { hdsl2ShdslCompliances 1 }

-- units of conformance

--

hds12ShdslSpanConfGroup OBJECT-GROUP

OBJECTS

```
{  
hds12ShdslConfNumRepeaters,  
hds12ShdslSpanConfProfile,  
hds12ShdslSpanAlarmConfProfile  
}
```

STATUS current

DESCRIPTION

"This group supports objects for configuring span related parameters for HDSL2/SHDSL lines."

::= { hds12ShdslGroups 1 }

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hds12ShdslSpanStatusGroup OBJECT-GROUP

OBJECTS

```
{  
hds12ShdslStatusNumAvailRepeaters  
}
```

STATUS current

DESCRIPTION

"This group supports objects for retrieving span related status for HDSL2/SHDSL lines."

::= { hds12ShdslGroups 2 }

hds12ShdslInventoryShdslGroup OBJECT-GROUP

OBJECTS

```
{  
hds12ShdslInvTransmissionModeCapability  
}
```

STATUS current

DESCRIPTION

"This group supports objects for retrieving SHDSL-specific inventory information."

::= { hds12ShdslGroups 3 }

hds12ShdslSpanShdslStatusGroup OBJECT-GROUP

OBJECTS

```
{  
hds12ShdslStatusMaxAttainableLineRate,  
hds12ShdslStatusActualLineRate,  
hds12ShdslStatusTransmissionModeCurrent  
}
```

STATUS current

DESCRIPTION

"This group supports objects for retrieving SHDSL-specific span related status."

::= { hds12ShdslGroups 4 }

hdsl2ShdslInventoryGroup OBJECT-GROUP

OBJECTS

```
{
hdsl2ShdslInvIndex,
hdsl2ShdslInvVendorID,
hdsl2ShdslInvVendorModelNumber,
hdsl2ShdslInvVendorSerialNumber,
hdsl2ShdslInvVendorEOCSoftwareVersion,
hdsl2ShdslInvStandardVersion,
hdsl2ShdslInvVendorListNumber,
hdsl2ShdslInvVendorIssueNumber,
hdsl2ShdslInvVendorSoftwareVersion,
hdsl2ShdslInvEquipmentCode,
hdsl2ShdslInvVendorOther
}
```

STATUS current

DESCRIPTION

"This group supports objects that provide unit inventory information about the units in HDSL2/SHDSL lines."

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::= { hdsl2ShdslGroups 5 }

hdsl2ShdslEndpointConfGroup OBJECT-GROUP

OBJECTS

```
{
hdsl2ShdslEndpointSide,
hdsl2ShdslEndpointWirePair,
hdsl2ShdslEndpointAlarmConfProfile
}
```

STATUS current

DESCRIPTION

"This group supports objects for configuring parameters for segment endpoints in HDSL2/SHDSL lines."

::= { hdsl2ShdslGroups 6 }

hdsl2ShdslEndpointCurrGroup OBJECT-GROUP

OBJECTS

```
{
hdsl2ShdslEndpointSide,
hdsl2ShdslEndpointWirePair,
hdsl2ShdslEndpointCurrAtn,
hdsl2ShdslEndpointCurrSnrMgn,
hdsl2ShdslEndpointCurrStatus,
hdsl2ShdslEndpointES,
hdsl2ShdslEndpointSES,
hdsl2ShdslEndpointCRCAnomalies,
}
```

```

hds12ShdslEndpointLOSWS,
hds12ShdslEndpointUAS,
hds12ShdslEndpointCurr15MinTimeElapsed,
hds12ShdslEndpointCurr15MinES,
hds12ShdslEndpointCurr15MinSES,
hds12ShdslEndpointCurr15MinCRCAnomalies,
hds12ShdslEndpointCurr15MinLOSWS,
hds12ShdslEndpointCurr15MinUAS,
hds12ShdslEndpointCurr1DayTimeElapsed,
hds12ShdslEndpointCurr1DayES,
hds12ShdslEndpointCurr1DaySES,
hds12ShdslEndpointCurr1DayCRCAnomalies,
hds12ShdslEndpointCurr1DayLOSWS,
hds12ShdslEndpointCurr1DayUAS
}

```

STATUS current

DESCRIPTION

"This group supports objects which provide current status and performance measurements relating to segment endpoints in HDLS2/SHDSL lines."

::= { hds12ShdslGroups 7 }

hds12Shdsl15MinIntervalGroup OBJECT-GROUP

OBJECTS

```

{
hds12Shdsl15MinIntervalES,
hds12Shdsl15MinIntervalSES,
hds12Shdsl15MinIntervalCRCAnomalies,

```

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```

hds12Shdsl15MinIntervalLOSWS,
hds12Shdsl15MinIntervalUAS
}

```

STATUS current

DESCRIPTION

"This group supports objects which maintain historic performance measurements relating to segment endpoints in HDLS2/SHDSL lines in 15-minute intervals."

::= { hds12ShdslGroups 8 }

hds12Shdsl1DayIntervalGroup OBJECT-GROUP

OBJECTS

```

{
hds12Shdsl1DayIntervalMoniSecs,
hds12Shdsl1DayIntervalES,
hds12Shdsl1DayIntervalSES,
hds12Shdsl1DayIntervalCRCAnomalies,
hds12Shdsl1DayIntervalLOSWS,

```

```

hds12Shdsl1DayIntervalUAS
}
STATUS          current
DESCRIPTION
    "This group supports objects which maintain historic performance
    measurements relating to segment endpoints in HDSL2/SHDSL lines
    in 1-day intervals."
::= { hds12ShdslGroups 9 }

```

```

hds12ShdslMaintenanceGroup OBJECT-GROUP
OBJECTS
{
hds12ShdslMaintLoopbackConfig,
hds12ShdslMaintTipRingReversal,
hds12ShdslMaintPowerBackOff,
hds12ShdslMaintSoftRestart,
hds12ShdslMaintLoopbackTimeout,
hds12ShdslMaintUnitPowerSource
}
STATUS          current
DESCRIPTION
    "This group supports objects that provide support for
    maintenance actions for HDSL2/SHDSL lines."
::= { hds12ShdslGroups 10 }

```

```

hds12ShdslEndpointAlarmConfGroup OBJECT-GROUP
OBJECTS
{
hds12ShdslEndpointThreshLoopAttenuation,
hds12ShdslSpanWireInterface,
hds12ShdslEndpointThreshSNRMargin,
hds12ShdslEndpointThreshES,
hds12ShdslEndpointThreshSES,
hds12ShdslEndpointThreshCRCAnomalies,
hds12ShdslEndpointThreshLOSWS,
hds12ShdslEndpointThreshUAS,

```

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```

hds12ShdslEndpointAlarmConfProfileRowStatus
}
STATUS          current
DESCRIPTION
    "This group supports objects that allow configuration of alarm
    thresholds for various performance parameters for HDSL2/SHDSL
    lines."
::= { hds12ShdslGroups 11 }

```

```

hds12ShdslNotificationGroup NOTIFICATION-GROUP

```

## NOTIFICATIONS

```
{
hds12ShdslLoopAttenCrossingTrap,
hds12ShdslSNRMarginCrossingTrap,
hds12ShdslPerfESThreshTrap,
hds12ShdslPerfSESThreshTrap,
hds12ShdslPerfCRCAnomaliesThreshTrap,
hds12ShdslPerfLOSWSThreshTrap,
hds12ShdslPerfUASThreshTrap,
hds12ShdslSpanInvalidNumRepeaters,
hds12ShdslLoopbackFailure
}
STATUS      current
DESCRIPTION
    "This group supports traps that enable notification of
    significant events/conditions associated with HDLS2/SHDSL
    lines."
::= { hds12ShdslGroups 12 }
```

## hds12ShdslSpanConfProfileGroup OBJECT-GROUP

```
OBJECTS
{
hds12ShdslSpanWireInterface,
hds12ShdslSpanMinLineRate,
hds12ShdslSpanMaxLineRate,
hds12ShdslSpanConfPSD,
hds12ShdslSpanConfTransmissionMode,
hds12ShdslSpanRemoteEnabled,
hds12ShdslSpanPowerFeeding,
hds12ShdslSpanConfProfileRowStatus
}
STATUS      current
DESCRIPTION
    "This group supports objects that constitute configuration
    profiles for configuring span related parameters in SHDSL
    lines."
::= { hds12ShdslGroups 13 }
```

END

## [7. Security Considerations](#)

Security issues are not discussed in this memo.

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## [8. Acknowledgments](#)

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