

# Technical Report TR-028

## CMIP Specification for ADSL Network Element Management

May 1999

### **ABSTRACT:**

This document updates the CMIP based management framework for ADSL Network Elements defined in ADSL Forum TR-016. The updates reflect decisions taken by the Network Management working group to bring this specification in alignment with ITU G.997.1 (G.ploam) and ANSI T1.413-1998.

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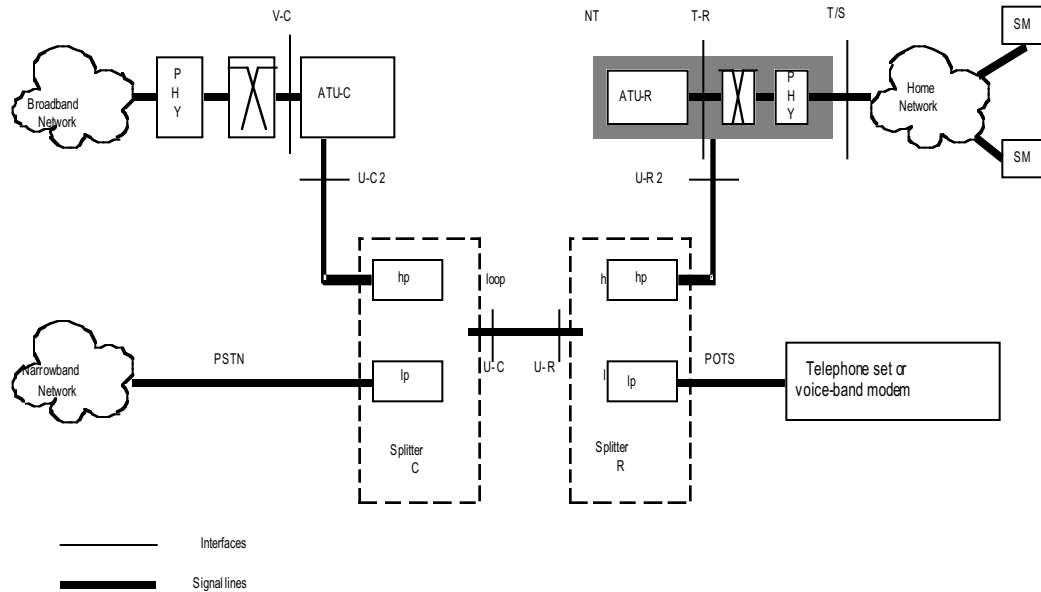
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## 1 INTRODUCTION

This document specifies a CMIP based management framework to be used for the management of ADSL Network Elements. This framework is based on the general management criteria for ADSL Network Elements defined in ADSL Forum Technical Report TR-005 [1], ITU-T G.997.1 (G.ploam) [9], and ANSI T1.413 [10].

## 2 Management Framework

The general framework for management of ADSL Network Elements is specified in ADSL Forum Technical Report TR-005<sup>[1]</sup>. This document uses the ADSL Forum System Reference Model specified in TR-005 (Figure 1) [1].



**Figure 1 : ADSL Forum System Reference Model**

This specification only deals with management of the following elements as per the above reference model:

- ADSL parameters in ATU-C (ADSL Termination Unit – Central)
- ADSL parameters in ATU-R (ADSL Termination Unit – Remote)
- ADSL Line (Physical transport medium between ATU-C & ATU-R)
- ADSL Channels (Transport channels defined over the ADSL Line.)

As outlined in TR-005, management of ADSL parameters in ATU-R is controlled by the ATU-C based on procedures specified in ANSI T1.413 specification.

---

## 3 Management Information Model

This section specifies the CMIP management information model to be used for the management of ADSL entities described in the Management Framework section. The management information model consists of GDMO (Guidelines for the Definition of Managed Objects) templates, ASN.1 (Abstract Syntax Notation One) syntax, and CMISE (Common Management Information Service Element) services and protocol.

This model is based on pre-existing object definitions from following ITU-T specifications:

- ITU-T M.3100
- ITU-T X.721
- ITU-T X.739
- ITU-T Q.822

Following sub-sections define new objects specifically needed for ADSL management. Figure-2 shows the containment tree diagram, while figures 3 and 4 show the inheritance relationships for the objects defined in this document.

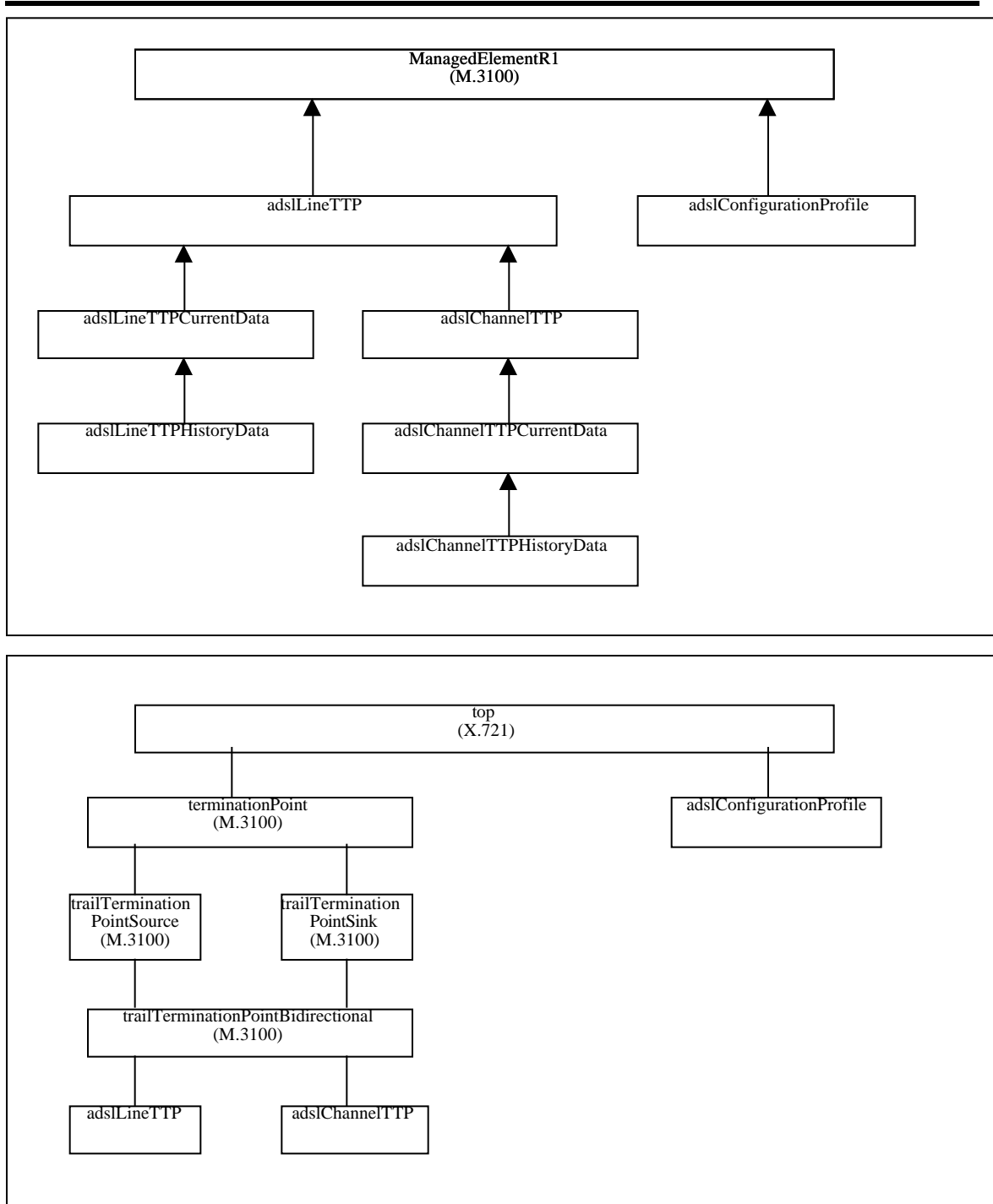


Figure 3 : Inheritance Tree Diagram (1 of 2)



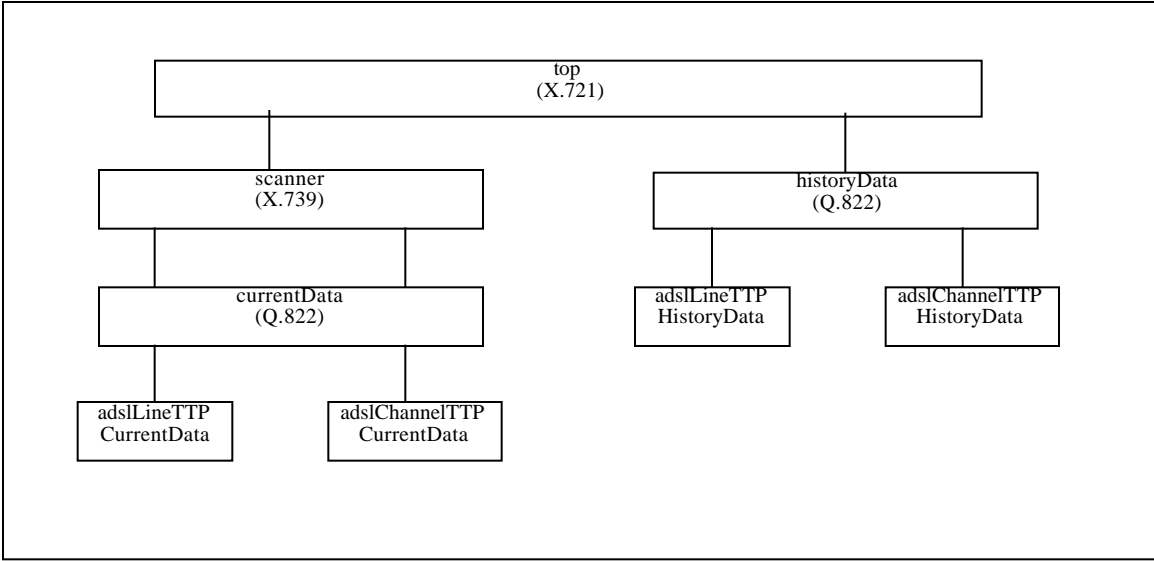


Figure 4 : Inheritance Tree Diagram (2 of 2)

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## 3.1 Managed Object Definitions

### 3.1.1 adslChannelTTP

adslChannelTTP MANAGED OBJECT CLASS

DERIVED FROM

"Rec. M.3100": trailTerminationPointBidirectional;

CHARACTERIZED BY

"Rec. X.721 | ISO/IEC 10165-2": administrativeStatePackage,

"Rec. M.3100": createDeleteNotificationsPackage,

"Rec. M.3100": attributeValueChangeNotificationsPackage,

adslChannelTTPkg PACKAGE

BEHAVIOUR adslChannelTTPbeh;

ATTRIBUTES

adslChannelTTPId GET,

channelType GET

SET-BY-CREATE,

currentChannelRate GET,

previousChannelRate GET;;;

CONDITIONAL PACKAGES

interleaveDelayPkg

PRESENT IF "The channelType is Interleaved",

currentCrcBLPkg

PRESENT IF "The channelType is Fast or Interleaved",

rateAdaptationNotificationPkg

PRESENT IF "The channelType is Fast or Interleaved, and Run-time rate adaptation is supported";

REGISTERED AS { adslfNMObjectClass 1 };

adslChannelTTPbeh BEHAVIOUR

DEFINED AS

"adslChannelTTP object is used to model channel terminations on ATU-C and ATU-R. It represent both connection and trail termination aspects. One instance of this managed object class is created for each supported channel.

For a given adslLineTTP object instance the total of current channel rates of the contained adslChannelTTP instances cannot exceed its line rate. The inherited supportedByObjectList attribute points to the associated equipment unit(s). ";

---

### 3.1.2 adslChannelTTPCurrentData

adslChannelTTPCurrentData MANAGED OBJECT CLASS

DERIVED FROM

"Rec. Q.822": currentData;

CHARACTERIZED BY

"Rec. M.3100": createDeleteNotificationsPackage,

"Rec. M.3100": attributeValueChangeNotificationsPackage,

"Rec. Q822": thresholdPkg,

adslChannelTTPCurrentDataPkg PACKAGE

BEHAVIOUR adslChannelTTPCurrentDataBeh;;;

CONDITIONAL PACKAGES

adslChannelRvcBlocksPkg PRESENT IF

"an instance supports it",

adslChannelTxBlocksPkg PRESENT IF

"an instance supports it",

adslChannelCorrectedBlocksPkg PRESENT IF

"an instance supports it",

adslChannelUncorrectedBlocksPkg PRESENT IF

"an instance supports it",

adslChannelCodeViolationsPkg PRESENT IF

"an instance supports it";

REGISTERED AS { adslfNMObjectClass 2 };

adslChannelTTPCurrentDataBeh BEHAVIOUR

DEFINED AS

"adslChannelTTPCurrentData object is used to monitor performance monitoring aspects of an ADSL channel. Instances of this managed object class shall model 1 Day counters";

### 3.1.3 adslChannelTTPHistoryData

adslChannelTTPHistoryData MANAGED OBJECT CLASS

DERIVED FROM

"Rec. Q.822": historyData;

CHARACTERIZED BY

"Rec. X.721 | ISO/IEC 10165-2": objectDeleteNotificationPkg,

"Rec. Q.822": historyDataSuspectIntervalFlagPkg,

adslChannelTTPHistoryDataPkg PACKAGE

BEHAVIOUR adslChannelTTPHistoryDataBeh;;;

CONDITIONAL PACKAGES

adslChannelRvcBlocksRecordPkg PRESENT IF  
 "an instance supports it",  
 adslChannelTxBlocksRecordPkg PRESENT IF  
 "an instance supports it",  
 adslChannelCorrectedBlocksRecordPkg PRESENT IF  
 "an instance supports it",  
 adslChannelUncorrectedBlocksRecordPkg PRESENT IF  
 "an instance supports it",  
 adslChannelCodeViolationsRecordPkg PRESENT IF  
 "an instance supports it";

REGISTERED AS { adslfNMObjectClass 3 };

adslChannelTTPHistoryDataBeh BEHAVIOUR  
 DEFINED AS  
 "adslChannelTTPHistoryData object is used to keep previous  
 performance monitoring counters of an ADSL channel.";

**3.1.4 adslConfigurationProfile**

adslConfigurationProfile MANAGED OBJECT CLASS  
 DERIVED FROM  
 "Rec. X.721 | ISO/IEC 10165-2": top;  
 CHARACTERIZED BY  
 "Rec. M.3100": createDeleteNotificationsPackage,  
 "Rec. M.3100": attributeValueChangeNotificationsPackage,

adslConfigurationProfilePkg PACKAGE  
 BEHAVIOUR adslConfigurationProfileBeh;

ATTRIBUTES

adslConfigurationProfileId	GET,
rateModeAtuC	GET
targetSnrMarginAtuC	SET-BY-CREATE,
	GET
maxSnrMarginAtuC	SET-BY-CREATE,
	GET
minSnrMarginAtuC	SET-BY-CREATE,
	GET
rateModeAtuR	SET-BY-CREATE,
	GET

---

targetSnrMarginAtuR	SET-BY-CREATE, GET
maxSnrMarginAtuR	SET-BY-CREATE, GET
minSnrMarginAtuR	SET-BY-CREATE, GET
configuredChannelTypes	SET-BY-CREATE, GET
	SET-BY-CREATE;;;

**CONDITIONAL PACKAGES**

rateAdaptivePkg

PRESENT IF "Rate adaptive ADSL mode is available",

fastPkg

PRESENT IF "Fast channel mode is supported",

interleavedPkg

PRESENT IF "Interleaved channel mode is supported",

rateChangeRatioPkg

PRESENT IF "Rate adaptive ADSL mode is available , and, both Fast and Interleaved channels are supported at the same time"

powerManagementPkg

PRESENT IF "Optional power management procedures are supported";

REGISTERED AS { adslfNMObjectClass 4 };

**adslConfigurationProfileBeh BEHAVIOUR**

DEFINED AS

"adslConfigurationProfile managed object class contains a list of parameters to be used in configuring an ADSL Modem.

The instances of this object class is pointed to by adslLineTTP object instances representing ATU-C side of an ADSL Line. However, this object class defines the attributes pertaining to both the ATU-C, as well as the related ATU-R. Note that the ATU-C configures the ATU-R.

The fastPkg and interleavedPkg control the configuration of channels to be supported. If fastPkg is present, fast channel is configured. If interleavedPkg is present, the interleaved channel is configured. If both fastPkg and interleavedPkg are present, both channels are configured.";

**3.1.5 adslLineTTP****adslLineTTP MANAGED OBJECT CLASS**

---

**DERIVED FROM**

"Rec. M.3100": trailTerminationPointBidirectional;

**CHARACTERIZED BY**

"Rec. X.721 | ISO/IEC 10165-2": administrativeStatePackage,

"Rec. M.3100": createDeleteNotificationsPackage,

"Rec. M.3100": attributeValueChangeNotificationsPackage,

"Rec. M.3100": stateChangeNotificationsPackage,  
initFailurePkg,

**adslLineTTPPkg PACKAGE**

BEHAVIOUR adslLineTTPBeh;

**ATTRIBUTES**

adslLineTTPId	GET	
	SET-BY-CREATE,	
lineCoding	GET,	
currentSnrMargin	GET,	
currentAttenuation	GET,	
currentOutputPower		GET,
currentAttainableRate	GET,	
currentLineRate	GET,	
previousLineRate	GET,	
supportedChannelTypes	GET,	
adslAvailabilityStatus	GET,	
supportedOperationalModes	GET,	
currentOperationalMode	GET;;;	

**CONDITIONAL PACKAGES**

adslConfigurationProfilePointerPkg PRESENT IF

"The object instance represents the ATU-C side of the ADSL line",

allowedOperationalModesPkg PRESENT IF

"The object instance represents the ATU-C side of the ADSL line";

REGISTERED AS { adslIfNMOBJECTClass 5 };

**adslLineTTPBeh BEHAVIOUR****DEFINED AS**

"adslLineTTP object is used to model a Physical ADSL line termination.

The inherited supportedByObjectList attribute points to the associated equipment unit(s).

The inherited downstreamConnectivityPointer of an adslLineTTP instance representing the ATU-C side of the ADSL line, points to the

---

related `adslLineTTP` instance representing the ATU-R side of the ADSL line.

The inherited `upstreamConnectivityPointer` of an `adslLineTTP` instance representing the ATU-R side of the ADSL line, points to the related `adslLineTTP` instance representing the ATU-C side of the ADSL line.

The `configurationProfilePointer` attribute, which is only present for the instances of `adslLineTTP` object representing the ATU-C side of the ADSL line, points to the object class instance representing physical line configuration information for both ATU-C and ATU-R.

The `adslAvailabilityStatus` attribute further qualifies the inherited `operationState` attribute.

The `lineCodeSpecificProfilePointer` attribute is included for future expansion of the model with vendor or line code specific information”;

### 3.1.6 `adslLineTTPCurrentData`

`adslLineTTPCurrentData` MANAGED OBJECT CLASS

DERIVED FROM

“Rec. Q.822”: `currentData`;

CHARACTERIZED BY

“Rec. M.3100”: `createDeleteNotificationsPackage`,

“Rec. M.3100”: `attributeValueChangeNotificationsPackage`,

“Rec. Q.822”: `thresholdPkg`,

`adslLineTTPCurrentDataPkg` PACKAGE

BEHAVIOUR `adslLineTTPCurrentDataBeh`;;;

CONDITIONAL PACKAGES

`adslLofsPkg` PRESENT IF

“an instance supports it”,

`adslLolsPkg` PRESENT IF

“an instance supports it”,

`adslLossPkg` PRESENT IF

“an instance supports it”,

`adslLprsPkg` PRESENT IF

“an instance supports it”,

`adslEssPkg` PRESENT IF

“an instance supports it”,

`adslSessPkg` PRESENT IF

---

"an instance supports it",  
 adslUassPkg PRESENT IF  
 "an instance supports it",  
 adslFastRetrainPkg PRESENT IF  
 "an instance supports it",  
 adslFecsPkg PRESENT IF  
 "an instance supports it";

REGISTERED AS { adslfNMObjectClass 6 };

adslLineTTPCurrentDataBeh BEHAVIOUR  
 DEFINED AS  
 "adslLineTTPCurrentData object is used to monitor performance monitoring aspects of an ADSL physical line. Instances of this managed object class shall model 15 Min and 1 Day counters";

### 3.1.7 adslLineTTPHistoryData

adslLineTTPHistoryData MANAGED OBJECT CLASS  
 DERIVED FROM  
 "Recommendation Q.822": historyData;  
 CHARACTERIZED BY  
 "Rec. X.721 | ISO/IEC 10165-2": objectDeleteNotificationPkg,  
 "Rec. Q.822": historyDataSuspectIntervalFlagPkg,  
  
 adslLineTTPHistoryDataPkg PACKAGE  
 BEHAVIOUR adslLineTTPHistoryDataBeh;;;

CONDITIONAL PACKAGES  
 adslLofsRecordPkg PRESENT IF  
 "an instance supports it",  
 adslLolsRecordPkg PRESENT IF  
 "an instance supports it",  
 adslLossRecordPkg PRESENT IF  
 "an instance supports it",  
 adslLprsRecordPkg PRESENT IF  
 "an instance supports it",  
 adslEssRecordPkg PRESENT IF  
 "an instance supports it",  
 adslSessRecordPkg PRESENT IF  
 "an instance supports it",  
 adslUassRecordPkg PRESENT IF  
 "an instance supports it",  
 adslFastRetrainRecordPkg PRESENT IF



“an instance supports it”,  
adslFecsRecordPkg PRESENT IF  
“an instance supports it”;

REGISTERED AS { adslfNMObjectClass 7 };

adslLineTTPHistoryDataBeh BEHAVIOUR  
DEFINED AS  
“adslLineTTPHistoryData object is used to keep previous performance  
counters of an ADSL physical line.”;

---

## 3.2 Conditional Packages

### 3.2.1 adslChannelCorrectedBlocksPkg

```
adslChannelCorrectedBlocksPkg    PACKAGE
  ATTRIBUTES
    adslChannelCorrectedBlocks
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 1 };
```

### 3.2.2 adslChannelCorrectedBlocksRecordPkg

```
adslChannelCorrectedBlocksRecordPkg PACKAGE
  ATTRIBUTES
    adslChannelCorrectedBlocks
      GET;
REGISTERED AS { adslfNMPackage 2 };
```

### 3.2.3 adslChannelRcvBlocksPkg

```
adslChannelRcvBlocksPkg PACKAGE
  ATTRIBUTES
    adslChannelRcvBlocks
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 3 };
```

### 3.2.4 adslChannelRcvBlocksRecordPkg

```
adslChannelRcvBlocksRecordPkg PACKAGE
  ATTRIBUTES
    adslChannelRcvBlocks
      GET;
REGISTERED AS { adslfNMPackage 4 };
```

---

### 3.2.5 adslChannelTxBlocksPkg

```
adslChannelTxBlocksPkg PACKAGE
  ATTRIBUTES
    adslChannelTxBlocks
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 5 };
```

### 3.2.6 adslChannelTxBlocksRecordPkg

```
adslChannelTxBlocksRecordPkg PACKAGE
  ATTRIBUTES
    adslChannelTxBlocks
      GET;
REGISTERED AS { adslfNMPackage 6 };
```

### 3.2.7 adslChannelUncorrectedBlocksPkg

```
adslChannelUncorrectedBlocksPkg PACKAGE
  ATTRIBUTES
    adslChannelUncorrectedBlocks
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 7 };
```

### 3.2.8 adslChannelUncorrectedBlocksRecordPkg

```
adslChannelUncorrectedBlocksRecordPkg PACKAGE
  ATTRIBUTES
    adslChannelUncorrectedBlocks
      GET;
REGISTERED AS { adslfNMPackage 8};
```

---

### 3.2.9 adslConfigurationProfilePointerPkg

```
adslConfigurationProfilePointerPkg PACKAGE
  ATTRIBUTES
    adslConfigurationProfilePointer
      GET-REPLACE,
    lineCodeSpecificProfilePointer
      GET-REPLACE;
REGISTERED AS { adslfNMPackage 9 };
```

### 3.2.10 adslEssPkg

```
adslEssPkg PACKAGE
  ATTRIBUTES
    adslEss
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 10 };
```

### 3.2.11 adslEssRecordPkg

```
adslEssRecordPkg PACKAGE
  ATTRIBUTES
    adslEss
      GET;
REGISTERED AS { adslfNMPackage 11 };
```

### 3.2.12 adslFastRetrainPkg

```
adslFastRetrainPkg PACKAGE
  ATTRIBUTES
    adslNumFastRetrains
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET,
    adslFailedFastRetrains
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
```

---

REGISTERED AS { adslfNMPackage 12 };

### 3.2.13 adslFastRetrainRecordPkg

```
adslFastRetrainRecordPkg    PACKAGE
  ATTRIBUTES
    adslNumFastRetrains
      GET,
    adslFailedFastRetrains
      GET;
REGISTERED AS { adslfNMPackage 13 };
```

### 3.2.14 adslLofsPkg

```
adslLofsPkg PACKAGE
  ATTRIBUTES
    adslLofs
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 14 };
```

### 3.2.15 adslLofsRecordPkg

```
adslLofsRecordPkg PACKAGE
  ATTRIBUTES
    adslLofs
      GET;
REGISTERED AS { adslfNMPackage 15 };
```

### 3.2.16 adslLolsPkg

```
adslLolsPkg PACKAGE
  ATTRIBUTES
    adslLols
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 16 };
```

---

### 3.2.17 adslLolsRecordPkg

```
adslLolsRecordPkg    PACKAGE
  ATTRIBUTES
    adslLols
      GET;
REGISTERED AS { adslfNMPackage 17 };
```

### 3.2.18 adslLossPkg

```
adslLossPkg          PACKAGE
  ATTRIBUTES
    adslLoss
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 18 };
```

### 3.2.19 adslLossRecordPkg

```
adslLossRecordPkg   PACKAGE
  ATTRIBUTES
    adslLoss
      GET;
REGISTERED AS { adslfNMPackage 19 };
```

### 3.2.20 adslLprsPkg

```
adslLprsPkg          PACKAGE
  ATTRIBUTES
    adslLprs
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 20 };
```

---

### 3.2.21 adslLprsRecordPkg

```
adslLprsRecordPkg PACKAGE
  ATTRIBUTES
    adslLprs
      GET;
REGISTERED AS { adslfNMPackage 21 };
```

### 3.2.22 adslSessPkg

```
adslSessPkg PACKAGE
  ATTRIBUTES
    adslSess
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 22 };
```

### 3.2.23 adslSessRecordPkg

```
adslSessRecordPkg PACKAGE
  ATTRIBUTES
    adslSess
      GET;
REGISTERED AS { adslfNMPackage 23 };
```

### 3.2.24 adslUassPkg

```
adslUassPkg PACKAGE
  ATTRIBUTES
    adslUass
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 24 };
```

---

### 3.2.25 adslUassRecordPkg

```
adslUassRecordPkg PACKAGE
  ATTRIBUTES
    adslUass
      GET;
REGISTERED AS { adslfNMPackage 25 };
```

### 3.2.26 allowedOperationalModesPkg

```
allowedOperationalModesPkg PACKAGE
  ATTRIBUTES
    allowedOperationalModes
      GET-REPLACE
      ADD-REMOVE;
REGISTERED AS { adslfNMPackage 26 };
```

### 3.2.27 currentCrcBLPkg

```
currentCrcBLPkg PACKAGE
  ATTRIBUTES
    currentCrcBL
      GET;
REGISTERED AS { adslfNMPackage 27 };
```

### 3.2.28 fastPkg

```
fastPkg PACKAGE
  ATTRIBUTES
    fastMinTxRateAtuC
      GET
      SET-BY-CREATE,
    fastMaxTxRateAtuC
      GET
      SET-BY-CREATE,
    fastMinTxRateAtuR
      GET
      SET-BY-CREATE,
    fastMaxTxRateAtuR
      GET
```



---

```

SET-BY-CREATE;
REGISTERED AS { adslfNMPackage 28 };

```

### 3.2.29 initFailurePkg

```

initFailurePkg PACKAGE
  ATTRIBUTES
    initFailedNotificationSwitch
      GET-REPLACE;
  NOTIFICATIONS
    initFailedNotification;
REGISTERED AS { adslfNMPackage 29 };

```

### 3.2.30 interleavedPkg

```

interleavedPkg PACKAGE
  ATTRIBUTES
    interleavedMinTxRateAtuC
      GET
      SET-BY-CREATE,
    interleavedMaxTxRateAtuC
      GET
      SET-BY-CREATE,
    maxInterleaveDelayAtuC
      GET
      SET-BY-CREATE,

    interleavedMinTxRateAtuR
      GET
      SET-BY-CREATE,
    interleavedMaxTxRateAtuR
      GET
      SET-BY-CREATE,
    maxInterleaveDelayAtuR
      GET
      SET-BY-CREATE;

REGISTERED AS { adslfNMPackage 30 };

```

---

### 3.2.31 interleaveDelayPkg

```
interleaveDelayPkg PACKAGE
  ATTRIBUTES
    interleaveDelay
      GET;
REGISTERED AS { adslfNMPackage 31 };
```

### 3.2.32 rateAdaptationNotificationPkg

```
rateAdaptationNotificationPkg PACKAGE
  ATTRIBUTES
    upThreshold
      GET-REPLACE,
    downThreshold
      GET-REPLACE;
  NOTIFICATIONS
    rateChangeNotification;
REGISTERED AS { adslfNMPackage 32 };
```

### 3.2.33 rateAdaptivePkg

```
rateAdaptivePkg PACKAGE
  ATTRIBUTES
    downShiftSnrMarginAtuC
      GET
      SET-BY-CREATE,
    upShiftSnrMarginAtuC
      GET
      SET-BY-CREATE,
    minDownShiftTimeAtuC
      GET
      SET-BY-CREATE,
    minUpShiftTimeAtuC
      GET
      SET-BY-CREATE,
    downShiftSnrMarginAtuR
      GET
      SET-BY-CREATE,
    upShiftSnrMarginAtuR
      GET
```

---

```
        SET-BY-CREATE,  
        minDownShiftTimeAtuR  
        GET  
        SET-BY-CREATE,  
        minUpShiftTimeAtuR  
        GET  
        SET-BY-CREATE;  
REGISTERED AS { adslfNMPackage 33 };
```

### 3.2.34 rateChangeRatioPkg

```
rateChangeRatioPkg PACKAGE  
  ATTRIBUTES  
    rateChangeRatioAtuC  
    GET  
    SET-BY-CREATE,  
    rateChangeRatioAtuR  
    GET  
    SET-BY-CREATE;  
REGISTERED AS { adslfNMPackage 34 };
```

### 3.2.35 powerManagementPkg

```
powerManagementPkg PACKAGE  
  ATTRIBUTES  
    lowPowerDataRateAtuC  
    GET  
    SET-BY-CREATE,  
    lowPowerDataRateAtuR  
    GET  
    SET-BY-CREATE;  
REGISTERED AS { adslfNMPackage 35 };
```

### 3.2.36 adslChannelCodeViolationsPkg

```
adslChannelCodeViolationsPkg PACKAGE  
  ATTRIBUTES  
    adslChannelCodeViolations  
    REPLACE-WITH-DEFAULT  
    DEFAULT VALUE AdslfMIBMod.integerZero  
    GET;
```

---

```
REGISTERED AS { adslfNMPackage 36 };
```

### 3.2.37 adslChannelCodeViolationsRecordPkg

```
adslChannelCodeViolationsRecordPkg    PACKAGE
  ATTRIBUTES
    adslChannelCodeViolations
      GET;
REGISTERED AS { adslfNMPackage 37 };
```

### 3.2.38 adslFecsPkg

```
adslFecsPkg    PACKAGE
  ATTRIBUTES
    adslChannelCodeViolations
      REPLACE-WITH-DEFAULT
      DEFAULT VALUE AdslfMIBMod.integerZero
      GET;
REGISTERED AS { adslfNMPackage 36 };
```

### 3.2.39 adslChannelCodeViolationsRecordPkg

```
adslChannelCodeViolationsRecordPkg    PACKAGE
  ATTRIBUTES
    adslChannelCodeViolations
      GET;
REGISTERED AS { adslfNMPackage 37 };
```

---

### 3.3 Attributes

#### 3.3.1 adslAvailabilityStatus

adslAvailabilityStatus ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.AdslAvailabilityStatus ;  
MATCHES FOR EQUALITY, SET-COMPARISON,  
SET-INTERSECTION;  
BEHAVIOUR adslAvailabilityStatusBeh;  
REGISTERED AS { adslfNMAAttribute 1 };

adslAvailabilityStatusBeh BEHAVIOUR  
DEFINED AS  
“This set-valued attribute further qualifies the operationState of the object instance . Valid conditions that may be included in this set-valued attribute, for an instance representing the ATU-C side of an ADSL Line are: LOF, LOS, LPR, LOL, lossOfSigQuality, dataInitFailure, configInitFailure, protocolInitFailure, noPeerPresent, and lowPowerMode. For an instance representing ATU-R side of an ADSL Line the valid values are: LOF, LOS, LPR, lossOfSigQuality, and lowPowerMode “;

#### 3.3.2 adslChannelCorrectedBlocks

adslChannelCorrectedBlocks ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;  
BEHAVIOUR adslChannelCorrectedBlocksBeh;  
REGISTERED AS { adslfNMAAttribute 2 };

adslChannelCorrectedBeh BEHAVIOUR  
DEFINED AS  
“This attribute indicates the count of all blocks received with an error and corrected.“;

#### 3.3.3 adslChannelCTPId

adslChannelCTPId ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.NameType;  
MATCHES FOR EQUALITY;  
BEHAVIOUR adslChannelCTPIdBeh;  
REGISTERED AS { adslfNMAAttribute 3 };

---

adslChannelCTPIdBeh BEHAVIOUR

DEFINED AS

“This attribute is the object instance identifier for the adslChannelCTP.”;

### 3.3.4 adslChannelRcvBlocks

adslChannelRcvBlocks ATTRIBUTE

DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;

BEHAVIOUR adslChannelRcvBlocksBeh;

REGISTERED AS { adslfNMAtribute 4 };

adslChannelRcvBlocksBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the count of all received encoded blocks.”;

### 3.3.5 adslChannelTxBlocks

adslChannelTxBlocks ATTRIBUTE

DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;

BEHAVIOUR adslChannelTxBlocksBeh;

REGISTERED AS { adslfNMAtribute 5 };

adslChannelTxBlocksBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the count of all transmitted encoded blocks.”;

### 3.3.6 adslChannelUncorrectedBlocks

adslChannelUncorrectedBlocks ATTRIBUTE

DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;

BEHAVIOUR adslChannelUncorrectedBlocksBeh;

REGISTERED AS { adslfNMAtribute 6 };

adslChannelUncorrectedBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the count of all blocks received with uncorrectable errors.”;

### 3.3.7 adslConfigurationProfileId

adslConfigurationProfileId ATTRIBUTE

WITH ATTRIBUTE SYNTAX AdslfMIBMod.NameType;

---

MATCHES FOR EQUALITY;  
 BEHAVIOUR adslConfigurationProfileIdBeh;  
 REGISTERED AS { adslfNMAAttribute 7 };

adslConfigurationProfileIdBeh BEHAVIOUR  
 DEFINED AS  
 "This attribute is the object instance identifier for the  
 adslConfigurationProfile.";

### 3.3.8 adslConfigurationProfilePointer

adslConfigurationProfilePointer ATTRIBUTE  
 WITH ATTRIBUTE SYNTAX AdslfMIBMod.ObjectInstance;  
 MATCHES FOR EQUALITY;  
 BEHAVIOUR adslConfigurationProfilePointerBeh;  
 REGISTERED AS { adslfNMAAttribute 8 };

adslConfigurationProfilePointerBeh BEHAVIOUR  
 DEFINED AS  
 "This attribute is a pointer to the applicable ADSL Configuration Profile.";

### 3.3.9 adslEss

adslEss ATTRIBUTE  
 DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;  
 BEHAVIOUR adslEssBeh;  
 REGISTERED AS { adslfNMAAttribute 9 };

adslEssBeh BEHAVIOUR  
 DEFINED AS  
 "This attribute indicates the count of errored seconds (one or more crc,  
 one or more los or sef defects).";

### 3.3.10 adslFailedFastRetrains

adslFailedFastRetrains ATTRIBUTE  
 DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;  
 BEHAVIOUR adslFailedFastRetrainsBeh;  
 REGISTERED AS { adslfNMAAttribute 10 };

adslFailedFastRetrainsBeh BEHAVIOUR

---

DEFINED AS

“This attribute indicates the count of failed fast-retrain attempts.”;

### 3.3.11 adslLineTTPId

adslLineTTPId ATTRIBUTE

WITH ATTRIBUTE SYNTAX AdslfMIBMod.NameType;

MATCHES FOR EQUALITY;

BEHAVIOUR adslLineTTPIdBeh;

REGISTERED AS { adslfNMAttribute 11 };

adslLineTTPIdBeh BEHAVIOUR

DEFINED AS

“This attribute is the object instance identifier for the adslLineTTP.”;

### 3.3.12 adslLofs

adslLofs ATTRIBUTE

DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;

BEHAVIOUR adslLofsBeh;

REGISTERED AS { adslfNMAttribute 12 };

adslLofsBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the count of seconds where there was a Loss of Frame.”;

### 3.3.13 adslLols

adslLols ATTRIBUTE

DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;

BEHAVIOUR adslLolsBeh;

REGISTERED AS { adslfNMAttribute 13 };

adslLolsBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the count of seconds where there was a Loss of Link.”;



---

### 3.3.14 adslLoss

adslLoss ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;  
BEHAVIOUR adslLossBeh;  
REGISTERED AS { adslfNMAAttribute 14 };

adslLossBeh BEHAVIOUR  
DEFINED AS  
"This attribute indicates the count of seconds where there was a Loss of Signal.";

### 3.3.15 adslLprs

adslLprs ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;  
BEHAVIOUR adslLprsBeh;  
REGISTERED AS { adslfNMAAttribute 15 };

adslLprsBeh BEHAVIOUR  
DEFINED AS  
"This attribute indicates the count of seconds where there was a Loss of Power.";

### 3.3.16 adslNumFastRetrains

adslNumFastRetrains ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;  
BEHAVIOUR adslNumFastRetrainsBeh;  
REGISTERED AS { adslfNMAAttribute 16 };

adslNumFastRetrainsBeh BEHAVIOUR  
DEFINED AS  
"This attribute indicates the count of modem fast-retrain attempts.";

### 3.3.17 adslSess

adslSess ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;  
BEHAVIOUR adslSessBeh;  
REGISTERED AS { adslfNMAAttribute 17 };

---

adslSessBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the count of Severely Errored Seconds (SES).“;

### 3.3.18 adslUass

adslUass ATTRIBUTE

DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;

BEHAVIOUR adslUassBeh;

REGISTERED AS { adslfNMAtribute 18 };

adslUassBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the count of Unavailable Seconds (UAS).“;

### 3.3.19 allowedOperationalModes

allowedOperationalModes ATTRIBUTE

WITH ATTRIBUTE SYNTAX AdslfMIBMod.AdslOperationalModes;

MATCHES FOR EQUALITY, SET-COMPARISON,  
SET-INTERSECTION;

BEHAVIOUR allowedOperationalModesBeh;

REGISTERED AS { adslfNMAtribute 19 };

allowedOperationalModesBeh BEHAVIOUR

DEFINED AS

“This set-valued attribute configures the modem Operational Modes that should be allowed by the ATU-C. The allowed Modes should be a subset of the Modes supported by the ATU-C (as per the supportedOperationalModes attribute).“;

### 3.3.20 channelType

channelType ATTRIBUTE

WITH ATTRIBUTE SYNTAX AdslfMIBMod.AdslChannelType;

MATCHES FOR EQUALITY;

BEHAVIOUR channelTypeBeh;

REGISTERED AS { adslfNMAtribute 20 };

---

channelTypeBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the channel type (Fast, Interleaved, other).“;

### 3.3.21 currentAttainableRate

currentAttainableRate ATTRIBUTE

DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":gauge;

BEHAVIOUR currentAttainableRateBeh;

REGISTERED AS { adslfNMAAttribute 21 };

currentAttainableRateBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the current maximum attainable transmit rate for the ATU in kbps. This value is greater than or equal to the current line rate.“;

### 3.3.22 currentAttenuation

currentAttenuation ATTRIBUTE

DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":gauge;

BEHAVIOUR currentAttenuationBeh;

REGISTERED AS { adslfNMAAttribute 22 };

currentAttenuationBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the measured difference in the total power transmitted by peer ATU and the total power received by this ATU in 1/10<sup>th</sup> of a dB.“;

### 3.3.23 currentChannelRate

currentChannelRate ATTRIBUTE

DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":gauge;

BEHAVIOUR currentChannelRateBeh;

REGISTERED AS { adslfNMAAttribute 23 };

currentChannelRateBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the current transmit rate in kbps for the associated ADSL channel.“;

---

### 3.3.24 currentCrcBL

currentCrcBL ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":gauge;  
BEHAVIOUR currentCrcBLBeh;  
REGISTERED AS { adslfNMAAttribute 24 };

currentCrcBLBeh BEHAVIOUR  
DEFINED AS  
"This attribute represents the current length of the channel data-block  
on which the CRC is calculated in bytes.";

### 3.3.25 currentLineRate

currentLineRate ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":gauge;  
BEHAVIOUR currentLineRateBeh;  
REGISTERED AS { adslfNMAAttribute 25 };

currentLineRateBeh BEHAVIOUR  
DEFINED AS  
"This attribute represents the current data rate for the ADSL line in  
kbps. ";

### 3.3.26 currentOperationalMode

currentOperationalMode ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.AdslOperationalMode;  
MATCHES FOR EQUALITY;  
BEHAVIOUR currentOperationalModeBeh;  
REGISTERED AS { adslfNMAAttribute 26 };

currentOperationalModeBeh BEHAVIOUR  
DEFINED AS  
"This attribute represents the currently selected modem  
Operational Mode.";

### 3.3.27 currentOutputPower

currentOutputPower ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":gauge;

---

BEHAVIOUR currentOutputPowerBeh;  
REGISTERED AS { adslfNMAAttribute 27 };

currentOutputPowerBeh BEHAVIOUR  
DEFINED AS  
“This attribute indicates the measured total output power transmitted by the associated ATU in 1/10<sup>th</sup> dBm.”;

### 3.3.28 currentSnrMargin

currentSnrMargin ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":gauge;  
BEHAVIOUR currentSnrMarginBeh;  
REGISTERED AS { adslfNMAAttribute 28 };

currentSnrMarginBeh BEHAVIOUR  
DEFINED AS  
“This attribute indicates the current noise margin for the received signal on the associated ATU in 1/10<sup>th</sup> of a dB.”;

### 3.3.29 downShiftSnrMarginAtuC

downShiftSnrMarginAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR downShiftSnrMarginAtuCBeh;  
REGISTERED AS { adslfNMAAttribute 29 };

downShiftSnrMarginAtuCBeh BEHAVIOUR  
DEFINED AS  
“This attribute indicates the signal/noise margin for rate downshift, in the case of a rate-adaptive ATU-C in 1/10<sup>th</sup> of a dB.”;

### 3.3.30 downShiftSnrMarginAtuR

downShiftSnrMarginAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR downShiftSnrMarginAtuRBeh;  
REGISTERED AS { adslfNMAAttribute 30 };

downShiftSnrMarginAtuRBeh BEHAVIOUR  
DEFINED AS

---

“This attribute indicates the signal/noise margin for rate downshift, in the case of a rate-adaptive ATU-R in 1/10<sup>th</sup> of a dB.”;

### 3.3.31 downThreshold

downThreshold ATTRIBUTE  
 WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
 MATCHES FOR EQUALITY, ORDERING;  
 BEHAVIOUR downThresholdBeh;  
 REGISTERED AS { adslfNMAtribute 31 };

downThresholdBeh BEHAVIOUR  
 DEFINED AS  
 “This attribute indicates the amount of decrement in the channel rate from the last time a rate-change notification was issued that will cause another rateChangeNotification to be sent . It is in kbps.”;

### 3.3.32 fastMaxTxRateAtuC

fastMaxTxRateAtuC ATTRIBUTE  
 WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
 MATCHES FOR EQUALITY, ORDERING;  
 BEHAVIOUR fastMaxTxRateAtuCBeh;  
 REGISTERED AS { adslfNMAtribute 32 };

fastMaxTxRateAtuCBeh BEHAVIOUR  
 DEFINED AS  
 “This attribute configures the maximum transmit rate allowed for the fast channel for the associated ATU-C in kbps.”;

### 3.3.33 fastMaxTxRateAtuR

fastMaxTxRateAtuR ATTRIBUTE  
 WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
 MATCHES FOR EQUALITY, ORDERING;  
 BEHAVIOUR fastMaxTxRateAtuRBeh;  
 REGISTERED AS { adslfNMAtribute 33 };

fastMaxTxRateAtuRBeh BEHAVIOUR  
 DEFINED AS  
 “This attribute configures the maximum transmit rate allowed for the fast

---

channel for the associated ATU-R in kbps.”;

### 3.3.34 fastMinTxRateAtuC

fastMinTxRateAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR fastMinTxRateAtuCBeh;  
REGISTERED AS { adslfNMAtribute 34 };

fastMinTxRateAtuCBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the minimum transmit rate acceptable for  
the fast channel in the associated ATU-C in kbps.”;

### 3.3.35 fastMinTxRateAtuR

fastMinTxRateAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR fastMinTxRateAtuRBeh;  
REGISTERED AS { adslfNMAtribute 35 };

fastMinTxRateAtuRBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the minimum transmit rate acceptable for the  
fast channel in the associated ATU-R in kbps.”;

### 3.3.36 initFailedNotificationSwitch

initFailedNotificationSwitch ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Boolean;  
MATCHES FOR EQUALITY;  
BEHAVIOUR initFailedNotificationSwitchBeh;  
REGISTERED AS { adslfNMAtribute 36 };

initFailedNotificationSwitchBeh BEHAVIOUR  
DEFINED AS  
“This attribute is used to enable (TRUE) / disable (FALSE) the  
initFailedNotifications”;

---

### 3.3.37 interleaveDelay

interleaveDelay ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":gauge;  
BEHAVIOUR interleaveDelayBeh;  
REGISTERED AS { adslfNMAttribute 37 };

interleaveDelayBeh BEHAVIOUR  
DEFINED AS  
"This attribute indicates the current interleaved delay on the associated interleaved channel in milli-seconds.";

### 3.3.38 interleavedMaxTxRateAtuC

interleavedMaxTxRateAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR interleavedMaxTxRateAtuCBeh;  
REGISTERED AS { adslfNMAttribute 38 };

interleavedMaxTxRateAtuCBeh BEHAVIOUR  
DEFINED AS  
"This attribute configures the maximum transmit rate allowed on the interleaved channel for the associated ATU-C in kbps.";

### 3.3.39 interleavedMaxTxRateAtuR

interleavedMaxTxRateAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR interleavedMaxTxRateAtuRBeh;  
REGISTERED AS { adslfNMAttribute 39 };

interleavedMaxTxRateAtuRBeh BEHAVIOUR  
DEFINED AS  
"This attribute configures the maximum transmit rate on the interleaved channel for the associated ATU-R in kbps.";



---

### 3.3.40 interleavedMinTxRateAtuC

interleavedMinTxRateAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR interleavedMinTxRateAtuCBeh;  
REGISTERED AS { adslfNMAtribute 40 };

interleavedMinTxRateAtuCBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the minimum transmit rate acceptable on the interleaved channel for the associated ATU-C in kbps.”;

### 3.3.41 interleavedMinTxRateAtuR

interleavedMinTxRateAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR interleavedMinTxRateAtuRBeh;  
REGISTERED AS { adslfNMAtribute 41 };

interleavedMinTxRateAtuRBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the minimum transmit rate acceptable on the interleaved channel for the associated ATU-R in kbps.”;

### 3.3.42 lineCodeSpecificProfilePointer

lineCodeSpecificProfilePointer ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.PointerOrNull;  
MATCHES FOR EQUALITY ;  
BEHAVIOUR lineCodeSpecificProfilePointerBeh;  
REGISTERED AS { adslfNMAtribute 42 };

lineCodeSpecificProfilePointerBeh BEHAVIOUR  
DEFINED AS  
“This attribute is a pointer to an optional line-code / vendor specific Configuration Profile. If the value is NULL, no profile is specified.”;

---

### 3.3.43 lineCoding

lineCoding ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.AdslLineCoding;  
MATCHES FOR EQUALITY;  
BEHAVIOUR lineCodingBeh;  
REGISTERED AS { adslfNMAttribute 43 };

lineCodingBeh BEHAVIOUR  
DEFINED AS  
“This attribute indicates the supported line coding for the ADSL Line (DMT, CAP, QAM, other).“;

### 3.3.44 maxInterleaveDelayAtuC

maxInterleaveDelayAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR maxInterleaveDelayAtuCBeh;  
REGISTERED AS { adslfNMAttribute 44 };

maxInterleaveDelayAtuCBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the maximum Interleave delay acceptable for the interleaved channel on the associated ATU-C in milli-seconds.“;

### 3.3.45 maxInterleaveDelayAtuR

maxInterleaveDelayAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR maxInterleaveDelayAtuRBeh;  
REGISTERED AS { adslfNMAttribute 45 };

maxInterleaveDelayAtuRBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the maximum acceptable Interleave delay for the interleaved channel on the associated ATU-R in milli-seconds.“;

---

### 3.3.46 maxSnrMarginAtuC

maxSnrMarginAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR maxSnrMarginAtuCBeh;  
REGISTERED AS { adslfNMAtribute 46 };

maxSnrMarginAtuCBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the maximum signal/noise margin the ATU-C should try to maintain before increasing the data-rate. The units are 1/10<sup>th</sup> of a dB“;

### 3.3.47 maxSnrMarginAtuR

maxSnrMarginAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR maxSnrMarginAtuRBeh;  
REGISTERED AS { adslfNMAtribute 47 };

maxSnrMarginAtuRBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the maximum signal/noise margin the ATU-R should attempt to maintain before increasing the data-rate. The units are 1/10<sup>th</sup> of a dB.“;

### 3.3.48 minDownShiftTimeAtuC

minDownShiftTimeAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR minDownShiftTimeAtuCBeh;  
REGISTERED AS { adslfNMAtribute 48 };

minDownShiftTimeAtuCBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the minimum time for which the noise margin should be below the downShiftSnrMargin before the ATU-C should attempt a rate downshift. Only applicable to rate-adaptive modems. The unit is seconds.“;

---

### 3.3.49 minDownShiftTimeAtuR

minDownShiftTimeAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR minDownShiftTimeAtuRBeh;  
REGISTERED AS { adslfNMAttribute 49 };

minDownShiftTimeAtuRBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the minimum time for which current margin should be below the downShiftSnrMargin before the ATU-R should attempt a rate downshift. Only applicable to rate-adaptive modems. The unit is seconds.”;

### 3.3.50 minSnrMarginAtuC

minSnrMarginAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR minSnrMarginAtuCBeh;  
REGISTERED AS { adslfNMAttribute 50 };

minSnrMarginAtuCBeh BEHAVIOUR  
DEFINED AS  
“This attribute configures the minimum acceptable signal/noise margin in 1/10<sup>th</sup> of a dB for the associated ATU-C.”;

### 3.3.51 minSnrMarginAtuR

minSnrMarginAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR minSnrMarginAtuRBeh;  
REGISTERED AS { adslfNMAttribute 51 };

minSnrMarginAtuRBeh BEHAVIOUR  
DEFINED AS  
“This attribute indicates the minimum acceptable signal/noise margin in 1/10<sup>th</sup> of a dB for the associated ATU-R.”;

---

### 3.3.52 minUpShiftTimeAtuC

minUpShiftTimeAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR minUpShiftTimeAtuCBeh;  
REGISTERED AS { adslfNMAttribute 52 };

minUpShiftTimeAtuCBeh BEHAVIOUR  
DEFINED AS  
“This attribute indicates the minimum time that the noise margin for the associated ATU-C should remain above the upShiftSnrMargin, before it should attempt a rate upshift. Only applicable to rate adaptive modems. Units are seconds“;

### 3.3.53 minUpShiftTimeAtuR

minUpShiftTimeAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR minUpShiftTimeAtuRBeh;  
REGISTERED AS { adslfNMAttribute 53 };

minUpShiftTimeAtuRBeh BEHAVIOUR  
DEFINED AS  
“This attribute indicates the minimum time that the noise margin for the associated ATU-C should remain above the upShiftSnrMargin, before it should attempt a rate upshift. Only applicable to rate adaptive modems. Units are seconds“;

### 3.3.54 previousChannelRate

previousChannelRate ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":gauge;  
BEHAVIOUR previousChannelRateBeh;  
REGISTERED AS { adslfNMAttribute 54 };

previousChannelRateBeh BEHAVIOUR  
DEFINED AS  
“This attribute indicates the previous rate of the associated ADSL channel in kbps for a rate-adaptive ATU following rate-change.“;

---

### 3.3.55 previousLineRate

previousLineRate ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":gauge;  
BEHAVIOUR previousLineRateBeh;  
REGISTERED AS { adslfNMAAttribute 55 };

previousLineRateBeh BEHAVIOUR  
DEFINED AS  
"This attribute indicates the previous rate of the ADSL line in kbps  
for the associated rate-adaptive ATU following rate-change.";

### 3.3.56 rateChangeRatioAtuC

rateChangeRatioAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR rateChangeRatioAtuCBeh;  
REGISTERED AS { adslfNMAAttribute 56 };

rateChangeRatioAtuCBeh BEHAVIOUR  
DEFINED AS  
"This attribute indicates the allocation ratio of excess transmit bandwidth  
between fast and interleaved channels, in the case where rate adaptive  
ADSL mode is available and both fast and interleaved channels are  
supported at the same time. The value is between 0..100 and is  
computed as follows:  
$$\text{rateChangeRatio} = [\text{Fast} / (\text{Fast} + \text{Interleaved})] * 100.$$
";

### 3.3.57 rateChangeRatioAtuR

rateChangeRatioAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR rateChangeRatioAtuRBeh;  
REGISTERED AS { adslfNMAAttribute 57 };

rateChangeRatioAtuRBeh BEHAVIOUR  
DEFINED AS  
"This attribute indicates the allocation ratio of excess transmit bandwidth  
between fast and interleaved channels, in the case where rate adaptive

---

ADSL mode is available and both fast and interleaved channels are supported at the same time. The value is between 0..100 and is computed as follows:

$$\text{rateChangeRatio} = [\text{Fast} / (\text{Fast} + \text{Interleaved})] * 100.;$$

### 3.3.58 rateModeAtuC

rateModeAtuC ATTRIBUTE

WITH ATTRIBUTE SYNTAX AdslfMIBMod.AdslRateMode;

MATCHES FOR EQUALITY;

BEHAVIOUR rateModeAtuCBeh;

REGISTERED AS { adslfNMAAttribute 58 };

rateModeAtuCBeh BEHAVIOUR

DEFINED AS

“This attribute indicates what type of rate adaptation mode is supported.  
(Fixed, Adapt-At-Start, Adapt-At-Runtime)”;

### 3.3.59 rateModeAtuR

rateModeAtuR ATTRIBUTE

WITH ATTRIBUTE SYNTAX AdslfMIBMod.AdslRateMode;

MATCHES FOR EQUALITY;

BEHAVIOUR rateModeAtuRBeh;

REGISTERED AS { adslfNMAAttribute 59 };

rateModeAtuRBeh BEHAVIOUR

DEFINED AS

“This attribute indicates what type of rate adaptation mode is supported.  
(Fixed, Adapt-At-Start, Adapt-At-Runtime)”;

### 3.3.60 supportedChannelTypes

supportedChannelTypes ATTRIBUTE

WITH ATTRIBUTE SYNTAX AdslfMIBMod.AdslChannelOptions;

MATCHES FOR EQUALITY, SET-COMPARISON,  
SET-INTERSECTION;

BEHAVIOUR supportedChannelTypesBeh;

REGISTERED AS { adslfNMAAttribute 60 };

supportedChannelTypesBeh BEHAVIOUR

---

**DEFINED AS**

“This attribute indicates supported channel types over an ADSL Line. (noChanne, fastOnly, interleavedOnly, fastAndInterleaved, fastOrInterleaved)”;

**3.3.61 supportedOperationalModes**

supportedOperationalModes ATTRIBUTE

WITH ATTRIBUTE SYNTAX AdslfMIBMod.AdslOperationalModes;  
MATCHES FOR EQUALITY, SET-COMPARISON,  
SET-INTERSECTION;

BEHAVIOUR supportedOperationalModesBeh;

REGISTERED AS { adslfNMAtribute 61 };

supportedOperationalModesBeh BEHAVIOUR

DEFINED AS

“This attribute indicates which ADSL Operational Modes are supported by the modem.”;

**3.3.62 targetSnrMarginAtuC**

targetSnrMarginAtuC ATTRIBUTE

WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;

BEHAVIOUR targetSnrMarginAtuCBeh;

REGISTERED AS { adslfNMAtribute 62 };

targetSnrMarginAtuCBeh BEHAVIOUR

DEFINED AS

“This attribute indicates the signal/noise margin (in 1/10<sup>th</sup> of dB) the modem must achieve with a BER of 10<sup>-7</sup> or better.”;

**3.3.63 targetSnrMarginAtuR**

targetSnrMarginAtuR ATTRIBUTE

WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;

BEHAVIOUR targetSnrMarginAtuRBeh;

REGISTERED AS { adslfNMAtribute 63 };

targetSnrMarginAtuRBeh BEHAVIOUR



---

**DEFINED AS**

“This attribute indicates the signal/noise margin (in 1/10<sup>th</sup> of dB) the modem must achieve with a BER of 10<sup>-7</sup> or better.”;

**3.3.64 upShiftSnrMarginAtuC****upShiftSnrMarginAtuC ATTRIBUTE**

WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;

MATCHES FOR EQUALITY, ORDERING;

BEHAVIOUR upShiftSnrMarginAtuCBeh;

REGISTERED AS { adslfNMAAttribute 64 };

**upShiftSnrMarginAtuCBeh BEHAVIOUR****DEFINED AS**

“This attribute indicates the signal/noise margin for rate upshift, in the case of rate adaptive ADSL in 1/10<sup>th</sup> of a dB.”;

**3.3.65 upShiftSnrMarginAtuR****upShiftSnrMarginAtuR ATTRIBUTE**

WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;

MATCHES FOR EQUALITY, ORDERING;

BEHAVIOUR upShiftSnrMarginAtuRBeh;

REGISTERED AS { adslfNMAAttribute 65 };

**upShiftSnrMarginAtuRBeh BEHAVIOUR****DEFINED AS**

“This attribute indicates the signal/noise margin for rate upshift, in the case of rate adaptive ADSL in 1/10<sup>th</sup> of a dB.”;

**3.3.66 upThreshold****upThreshold ATTRIBUTE**

WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;

MATCHES FOR EQUALITY, ORDERING;

BEHAVIOUR upThresholdBeh;

REGISTERED AS { adslfNMAAttribute 66 };

**upThresholdBeh BEHAVIOUR****DEFINED AS**

“This attribute indicates the minimum amount by which the rate must increase since the last notification in order to issue a new rate change notification. It is specified in kbps.”;

---

### 3.3.67 configuredChannelTypes

configuredChannelTypes ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.AdslChannelOptions;  
MATCHES FOR EQUALITY, SET-COMPARISON,  
SET-INTERSECTION;  
BEHAVIOUR configuredChannelTypesBeh;  
REGISTERED AS { adslfNMAttribute 67 };

configuredChannelTypesBeh BEHAVIOUR  
DEFINED AS  
"This attribute controls which channel type(s) are to be configured.  
(noChannel, fastOnly, interleavedOnly, fastAndInterleaved)";

### 3.3.68 lowPowerDataRateAtuC

lowPowerDataRateAtuC ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR lowPowerDataRateAtuCBeh;  
REGISTERED AS { adslfNMAttribute 68 };

lowPowerDataRateAtuCBeh BEHAVIOUR  
DEFINED AS  
"This attribute configures the L1 (low-power/power-down) state transmit  
bit-rate for the ATU-C in kbps.";

### 3.3.69 lowPowerDataRateAtuR

lowPowerDataRateAtuR ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.Integer;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR lowPowerDataRateAtuRBeh;  
REGISTERED AS { adslfNMAttribute 69 };

lowPowerDataRateAtuRBeh BEHAVIOUR  
DEFINED AS  
"This attribute configures the L1 (low-power/power-down) state transmit  
bit-rate for the ATU-R in kbps.";

---

### 3.3.70 adslChannelCodeViolations

adslChannelCodeViolations ATTRIBUTE  
DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2":counter;  
BEHAVIOUR adslChannelCodeViolationsBeh;  
REGISTERED AS { adslfNMAAttribute 70 };

adslChannelCodeViolationsBeh BEHAVIOUR  
DEFINED AS  
"This attribute indicates the count of crc-8 anomalies occurring in  
the data stream associated with this channel.";

### 3.3.71 adslChannelTTPId

adslChannelTTPId ATTRIBUTE  
WITH ATTRIBUTE SYNTAX AdslfMIBMod.NameType;  
MATCHES FOR EQUALITY;  
BEHAVIOUR adslChannelTTPIdBeh;  
REGISTERED AS { adslfNMAAttribute 71 };

adslChannelTTPIdBeh BEHAVIOUR  
DEFINED AS  
"This attribute is the object instance identifier for the adslChannelTTP.";

---

Name Bindings

### 3.3.72 adslChannelTTP-adslLineTTP

```
adslChannelTTP-adslLineTTP NAME BINDING
  SUBORDINATE OBJECT CLASS    adslChannelTTP;
  NAMED BY SUPERIOR OBJECT CLASS adslLineTTP;
  WITH ATTRIBUTE              adslChannelTTPId;
  CREATE
    WITH-REFERENCE-OBJECT,
    WITH-AUTOMATIC-INSTANCE-NAMING;
  DELETE
    DELETES-CONTAINED-OBJECTS ;
  REGISTERED AS { adslfNMNameBinding 1 };
```

### 3.3.73 adslChannelTTPCurrentData-adslChannelTTP

```
adslChannelTTPCurrentData-adslChannelTTP NAME BINDING
  SUBORDINATE OBJECT CLASS    adslChannelTTPCurrentData;
  NAMED BY SUPERIOR OBJECT CLASS adslChannelTTP;
  WITH ATTRIBUTE              "Recommendation X.739":scannerId;
  CREATE
    WITH-REFERENCE-OBJECT,
    WITH-AUTOMATIC-INSTANCE-NAMING;
  DELETE
    DELETES-CONTAINED-OBJECTS ;
  REGISTERED AS { adslfNMNameBinding 2 };
```

### 3.3.74 adslChannelTTPHistoryData- adslChannelTTPCurrentData

```
adslChannelTTPHistoryData-adslChannelTTPCurrentData NAME BINDING
  SUBORDINATE OBJECT CLASS    adslChannelTTPHistoryData;
  NAMED BY SUPERIOR OBJECT CLASS adslChannelTTPCurrentData;
  WITH ATTRIBUTE              "Recommendation Q.822":historyDataId;
  REGISTERED AS { adslfNMNameBinding 3 };
```

---

### 3.3.75 adslConfigurationProfile-managedElementR1

```
adslConfigurationProfile-managedElementR1 NAME BINDING
  SUBORDINATE OBJECT CLASS    adslConfigurationProfile;
  NAMED BY SUPERIOR OBJECT CLASS managedElementR1;
  WITH ATTRIBUTE              adslConfigurationProfileId;
  CREATE
    WITH-REFERENCE-OBJECT,
    WITH-AUTOMATIC-INSTANCE-NAMING;
  DELETE
    DELETES-CONTAINED-OBJECTS ;
REGISTERED AS { adslfNMNameBinding 4 };
```

### 3.3.76 adslLineTTP-managedElementR1

```
adslLineTTP-managedElementR1 NAME BINDING
  SUBORDINATE OBJECT CLASS    adslLineTTP;
  NAMED BY SUPERIOR OBJECT CLASS "Rec. M.3100":
managedElementR1;
  WITH ATTRIBUTE              adslLineTTPId;
  CREATE
    WITH-REFERENCE-OBJECT,
    WITH-AUTOMATIC-INSTANCE-NAMING;
  DELETE
    DELETES-CONTAINED-OBJECTS ;
REGISTERED AS { adslfNMNameBinding 5 };
```

### 3.3.77 adslLineTTPCurrentData-adslLineTTP

```
adslLineTTPCurrentData-adslLineTTP NAME BINDING
  SUBORDINATE OBJECT CLASS    adslLineTTPCurrentData;
  NAMED BY SUPERIOR OBJECT CLASS adslLineTTP;
  WITH ATTRIBUTE              "Recommendation X.739": scannerId;
  CREATE
    WITH-REFERENCE-OBJECT,
    WITH-AUTOMATIC-INSTANCE-NAMING;
  DELETE
    DELETES-CONTAINED-OBJECTS;
REGISTERED AS { adslfNMNameBinding 6 };
```

### 3.3.78 adslLineTTPHistoryData-adsLineTTPCurrentData

adslLineTTPHistoryData-adsLineTTPCurrentData NAME BINDING  
SUBORDINATE OBJECT CLASS adslLineTTPHistoryData;  
NAMED BY SUPERIOR OBJECT CLASS adsLineTTPCurrentData;  
WITH ATTRIBUTE "Recommendation Q.822":historyDataId;  
REGISTERED AS { adslfNMNameBinding 7 };

---

### 3.4 Actions

\*\*\* None Defined At Present \*\*\*

### 3.5 Notifications

#### 3.5.1 initFailedNotification

initFailedNotification NOTIFICATION

BEHAVIOUR initFailedNotificationBeh;

WITH INFORMATION SYNTAX AdslfMIBMod.AdslInitFailedInfo

AND ATTRIBUTE IDS

probableCause	ProbableCause,
notificationIdentifier	NotificationIdentifier;

REGISTERED AS { adslfNMNotification 1 };

initFailedNotificationBeh BEHAVIOUR

DEFINED AS

“This notification is sent when the ATU-C cannot initialize the ATU-R, and the value of the initFailedNotificationSwitch attribute is TRUE (on). The probableCause attribute indicates reason for initialization failure.”;

#### 3.5.2 rateChangeNotification

rateChangeNotification NOTIFICATION

BEHAVIOUR rateChangeNotificationBeh;

WITH INFORMATION SYNTAX AdslfMIBMod.AdslRateChangeInfo

AND ATTRIBUTE IDS

oldRate	Integer,
newRate	Integer,
notificationIdentifier	NotificationIdentifier;

REGISTERED AS { adslfNMNotification 2 };

rateChangeNotificationBeh BEHAVIOUR

DEFINED AS

“This notification is sent for Fast and Interleaved channels in the following cases:

- i) Rate increased since last notification by more than the 'upThreshold' value.
- ii) Rate decreased since last notification by more than the 'downThreshold' value.”;

---

### 3.6 Supporting Productions

```
AdslfMIBMod {1 3 6 1 4 1 adslForum(3561) adslForumNetworkManagement(1)
             adslfLineMIB(1) informationModel(0) asnlModule(2)
adslfMIBMod(0)}
```

```
DEFINITIONS IMPLICIT TAGS ::= BEGIN
```

```
-- exports everything
IMPORTS
    Boolean,
    NameType,
    PointerOrNull,
    ProblemCause
FROM ASN1DefinedTypesModule {ccitt recommendation m(13) gnm(3100)
                             informationModel(0) asnlModules(2)
                             asnlDefinedTypesModule(0) }
    DistinguishedName,
    RelativeDistinguishedName
FROM InformationFramework {joint-iso-ccitt ds(5) modules(1)
                           informationFramework(1)}
    EventTypeId,
    ObjectInstance
FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) modules(0) protocol(3)}
    AdministrativeState,
    AttributeList,
    ProbableCause,
    SimpleNameType
FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2)
                           asnlModule(2) 1};
```

```
adslfNMInformationModel OBJECT IDENTIFIER ::= { 1 3 6 1 4 1
                                                adslForum(3561)
                                                adslForumNetworkManagement(1)
                                                adslfLineMIB(1)
                                                informationModel(0)}
```

```
adslfNMStandardSpecificExtension OBJECT IDENTIFIER ::=
                                   {adslfNMInformationModel 0}
```

```
adslfNMObjectClass                OBJECT IDENTIFIER ::=
                                   {adslfNMInformationModel 3}
```

```
adslfNMPackage                    OBJECT IDENTIFIER ::=
                                   {adslfNMInformationModel 4}
```

```
adslfNMAttribute                  OBJECT IDENTIFIER ::=
                                   {adslfNMInformationModel 5}
```

```
adslfNMNameBinding                OBJECT IDENTIFIER ::=
                                   {adslfNMInformationModel 6}
```

```
adslfNMAction                     OBJECT IDENTIFIER ::=
                                   {adslfNMInformationModel 7}
```



---

```

adslfNMNotification OBJECT IDENTIFIER ::=
    {adslfNMInformationModel 8}

-- default value definitions
booleanFalseDefault Boolean ::= FALSE

booleanTrueDefault Boolean ::= TRUE

integerZero INTEGER ::= 0

-- Additional probableCause Definitions
adslfNMProbableCause OBJECT IDENTIFIER ::= {
    adslfNMStandardSpecificExtension 0 }

lossOfPower ProbableCause ::= globalValue :
    {adslfNMProbableCause 1}
lossOfLink ProbableCause ::= globalValue :
    {adslfNMProbableCause 2}
lossOfSignalQuality ProbableCause ::= globalValue :
    {adslfNMProbableCause 3}
dataInitFailure ProbableCause ::= globalValue :
    {adslfNMProbableCause 4}
configInitFailure ProbableCause ::= globalValue :
    {adslfNMProbableCause 5}
protocolInitFailure ProbableCause ::= globalValue :
    {adslfNMProbableCause 6}
noPeerAtuPresent ProbableCause ::= globalValue :
    {adslfNMProbableCause 7}

-- Additional eventTypes Definitions
adslfNMEventTypes OBJECT IDENTIFIER ::= {
    adslfNMStandardSpecificExtension 1 }

-- Supporting productions

AdslAvailabilityStatus ::= SET OF AdslLineCondition

AdslChannelOptions ::= ENUMERATED {
    noChannels(0),
    fastOnly(1),
    interleavedOnly(2),
    fastOrInterleaved(3),
    fastAndInterleaved(4)
}

AdslChannelType ::= ENUMERATED {
    fast(0),
    interleaved(1)
}

AdslInitFailedInfo ::= SEQUENCE {
    probableCause ProbableCause,
    notificationIdentifier NotificationIdentifier OPTIONAL
}

```

---

```
AdslLineCoding ::= ENUMERATED {
    other(0),
    dmt(1),
    cap(2),
    qam(3)
}

AdslLineCondition ::= ENUMERATED {
    lossOfFraming(0),
    lossOfSignal(1),
    lossOfPower(2),
    lossOfLink(3),
    lossOfSignalQuality(4),
    dataInitFailure(5),
    configInitFailure(6),
    protocolInitFailure(8),
    noPeerAtuPresent(9),
    lowPowerMode(10)
}

-- ADSL modem Operational Mode
AdslOperationalMode ::= ENUMERATED {
    ansi(0),                -- ANSI T1.413
    etsi(1),                -- ETSI DTS/TM06006
    potsNonOverlapped(2),  -- ITU G.992.1 POTS non-overlapped
    potsOverlapped(3),     -- ITU G.992.1 POTS overlapped
    isdnNonOverlapped(4),  -- ITU G.992.1 ISDN non-overlapped
    isdnOverlapped(5),     -- ITU G.992.1 ISDN overlapped
    isdnTcm(6),            -- ITU G.992.1 with TCM-ISDN
    potsNonOverlappedLite(7), -- ITU G.992.2 POTS non-overlapped
    potsOverlappedLite(8), -- ITU G.992.2 POTS overlapped
    isdnTcmLite(9)         -- ITU G.992.2 with TCM-ISDN
}

AdslOperationalModes ::= SET OF AdslOperationalMode

AdslRateChangeInfo ::= SEQUENCE {
    oldRate          Integer,
    newRate          Integer,
    notificationIdentifier NotificationIdentifier OPTIONAL
}

AdslRateMode ::= ENUMERATED {
    fixed(0),
    adaptAtStartup(1),
    adaptAtRuntime(2)
}

Integer ::= INTEGER
```

---

NotificationIdentifier ::= INTEGER

END

---

## 4 References

- [1] ADSL Forum Technical Report TR-005, "ADSL Network Element Management", March 1998.
- [2] ADSL Forum Contribution 98-010, "CMIP Model for ADSL Management", March 1998.
- [3] ADSL Forum Contribution 97-056, "GDMO Representation of the ADSL Function Model & Information Model", May 1997.
- [4] ITU-T Recommendation M.3100, "Generic Network Information Model", Version 2, March 1995.
- [5] ITU-T Recommendation Q.822, "Stage 1, State 2, and Stage 3 Description for the Q3 Interface Performance Management", April 1994.
- [6] ITU-T Recommendation X.721, "Information Technology - Open Systems Interconnection - Structure of Management Information - Part 2: Definition of Management Information", February 1992.
- [7] ADSL Forum 99-083, "Liaison from ITU Q4/SG15", March 1999.
- [8] ADSL Forum Contribution 98-196, "Aligning ADSL Line MIB with ANSI T1M1 and ITU-T G.997.1", November 1998.
- [9] ITU-T Draft Recommendation G.997.1, "Physical Layer Management for Digital Subscriber Line (DSL) Transceivers", October 1998.
- [10] ANSI T1.413 Issue-2, "Network and Customer Installation Interface – ADSL Metallic Interface", June 1998.