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**The SatLabs Group DVB-RCS MIB  
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Abstract

This document describes the MIB module for the Digital Video Broadcasting Return Channel via Satellite system (DVB-RCS), as defined by the SatLabs Group. It defines a set of MIB entities to characterize the behavior and performance of network layer entities deploying DVB-RCS.

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## [1.](#) Introduction

The SatLabs Group [[SATLABS](#)] is an international non-profit EEIG (European Economic Interest Grouping) committed to large-scale adoption and deployment of the Digital Video Broadcasting Return Channel via Satellite (DVB-RCS) standard [[ETSI-RCS](#)]. SatLabs members are service providers, satellite operators, system integrators, terminal manufacturers and technology providers with an interest in DVB-RCS.

Since its creation in 2001, the main goal of the SatLabs Group has been to achieve interoperability between DVB-RCS terminals and systems. Therefore, the Group has defined the SatLabs Qualification Program that provides an independent certification process for DVB-RCS Terminals based on System Recommendations defined by SatLabs. To enhance products interoperability, beyond the physical and MAC layer mechanisms defined in the DVB-RCS standard, SatLabs has expanded its Recommendations in the field of DVB-RCS terminal management [[SATLABS](#)]. As a part of this effort, SatLabs has specified a common SNMP Management Information Base (MIB) for DVB-RCS terminals, which is defined in this document.

A DVB-RCS terminal is denoted as a Return Channel Satellite Terminal (RCST) in the remainder of this document. This consists of an Indoor Unit (IDU) and an Outdoor Unit (ODU) connected through an Inter Facility Link (IFL), usually a coaxial L-band interface. On the user side, the IDU is connected to the user network through a Local Area Network (LAN) interface (usually Ethernet). On the network side, the ODU is connected via a satellite link (the Air Interface).



The SatLabs Group DVB-RCS MIB is implemented in the IDU of an RCST. RCST management can be performed either through the LAN interface (Local management) or through the Air Interface (Remote management from the Network Control Center, NCC). RCST and NCC elements are shown on Figure 1.

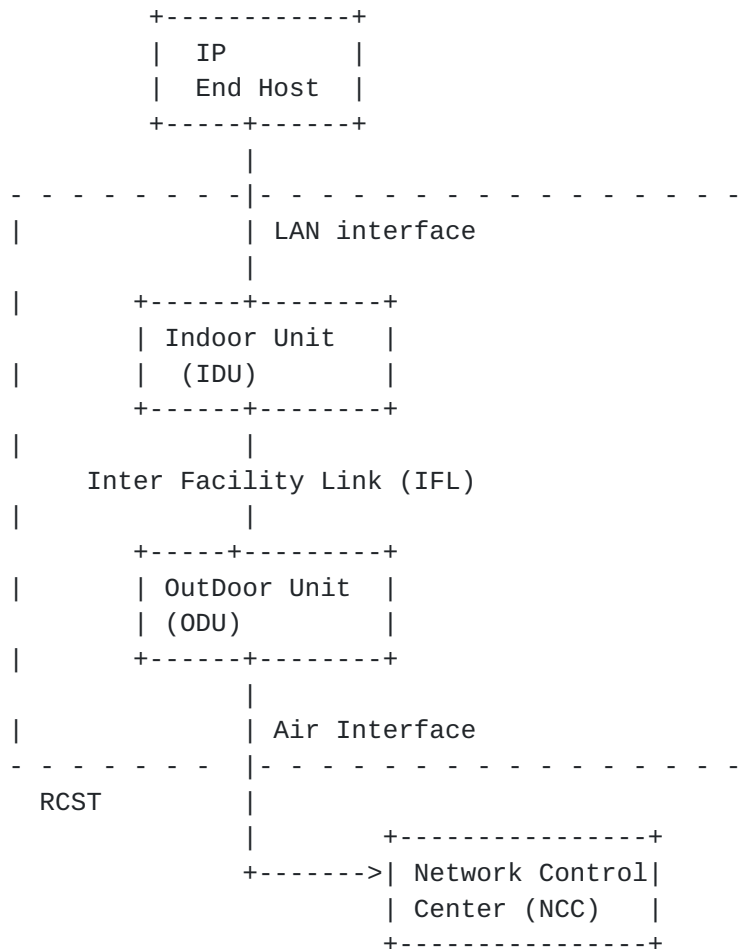


FIGURE 1: RCST architecture

## 2. Conventions used in this document

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community.

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to [section 7 of RFC 3410](#) [RFC3410].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].

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 [BCP 14](#), [RFC 2119](#) [[RFC2119](#)].

## **2.1. Abbreviations**

AAL5	ATM Adaptation Layer Type 5
ACM	Adaptive Coding and Modulation (defined in [ <a href="#">ETSI-DVBS2</a> ])
ATM	Asynchronous Transfer Mode
AVBDC	Absolute Volume-Based Dynamic Capacity
BER	Bit Error Ratio
BUC	Block Up-Converter
CCM	Constant Coding and Modulation
CNR	Carrier to Noise Ratio
CRA	Continuous Rate Assignment
CSC	Common Signalling Channel
CW	Continuous Wave (carrier frequency)
dBi	decibel (isotropic)
dBm	decibel (with respect to 1 mW)
DSCP	DiffServ Code Point
ETSI	European Telecommunications Standards Institute

FEC	Forward Error Correction
GS	Generic Stream
GSE	Generic Stream Encapsulation
IDU	InDoor Unit
IFL	Inter-Facility Link
LNB	Low Noise Block
LO	Local Oscillator
MAC	Medium Access Control
MIB	Management Information Base
MPEG	Motion Pictures Expert Group
MPE	Multi-Protocol Encapsulation
NCC	Network Control Centre
OAM	Operations and Management
ODU	OutDoor Unit
PHB	Per-Hop Behavior
PEP	Performance Enhancing Proxy
PID	Packet Identifier (MPEG, used as Program Identifier in DVB)
QoS	Quality of Service
RBDC	Rate-Based Dynamic Capacity
RC	Request Class
RCST	Return Channel via Satellite Terminal (DVB-RCS Terminal)
Rx	Receive
SDU	Service Data Unit



SSPA	Solid State Power Amplifier
TDM	Time Division Multiplex
TDMA	Time Division Multiple Access
TS	Transport Stream (as defined by MPEG)
Tx	Transmit
VBDC	Volume-Based Dynamic Capacity
VCID	Virtual Channel Identifier (ATM)
VPI	Virtual Path Identifier (ATM)
Vpp	Volts peak-to-peak

## **2.2. Glossary**

The terms in this document are derived either from DVB-RCS standard specifications [[ETSI-RCS](#)] or from SatLabs System Recommendations [[SATLABS](#)].

### **2.2.1. Star DVB-RCS network**

This denotes a hub-and-spoke configuration where all communications pass through a central hub, that usually also includes the NCC. Peer-to-peer communication between RCSTs is possible, but through a double satellite hop (this traffic has to pass through the hub).

### **2.2.2. Mesh DVB-RCS network**

This denotes a mesh configuration that supports peer-to-peer communications in a single satellite hop directly between RCSTs.

### **2.2.3. Transparent DVB-RCS network**

This denotes a network using transparent satellite transponders. Star or mesh network configurations can be supported. In the case of a mesh configuration, RCSTs need to incorporate a TDMA receiver in addition to the TDM receiver.

#### **2.2.4. Regenerative DVB-RCS network**

This denotes a network using regenerative satellite transponders, i.e. including some On-Board Processing functionality allowing demodulation and decoding of the uplink TDMA signals and re-multiplex the traffic on the downlink. Star or mesh network configurations can be supported.

#### **2.2.5. DVB-RCS MAC layer**

The DVB-RCS MAC Layer represents the air interface of an RCST, as specified in [[ETSI-RCS](#)]. The interface is bi-directional and supports IP traffic over hub-spoke (star) and mesh satellite network topologies.

#### **2.2.6. DVB-RCS TDM**

The DVB-RCS TDM corresponds to the forward link of a DVB-RCS transparent system or the downlink of a DVB-RCS regenerative system. It is based on either the DVB-S or DVB-S2 standard specified in [[ETSI-DVBS](#)] and [[ETSI-DVBS2](#)], respectively. In the DVB-RCS context, this interface is uni or bi-directional, as it may also be used for a return channel dedicated to a single terminal.

#### **2.2.7. DVB-RCS TDMA**

The DVB-RCS TDMA corresponds to the return or mesh link of a RCS transparent system or the uplink of a RCS regenerative system. It is specified in [[ETSI-RCS](#)].

In the context of star transparent and mesh regenerative DVB-RCS systems, this interface is uni-directional.

In the context of mesh transparent DVB-RCS systems, this interface is bi-directional.

#### **2.2.8. IDU**

This is the indoor part of the RCST (including at least the power supply, and usually also the modem and networking functions).

#### **2.2.9. ODU**

This is the outdoor part of the RCST (including at least the aerial, and usually also the LNB and BUC).



#### [2.2.10.](#) **RCST**

This is the Satellite Terminal, installed on the customer premises. It is composed of the IDU and ODU.

#### [2.2.11.](#) **NCC**

The NCC provides Control and Monitoring Functions. It generates control and timing signals for the operation of the DVB-RCS Network.

#### [2.2.12.](#) **Configuration file**

The configuration file is XML formatted file, storing configuration parameters for the RCST and their values.

#### [2.2.13.](#) **Log file**

The log file is stored at the RCST. This is used to log particular events that occur on RCST side.

#### [2.2.14.](#) **Installation log file**

The installation log file is stored at the RCST. This logs particular events that occur on RCST side, related to RCST installation phase.

#### [2.2.15.](#) **Antenna alignment**

This is the process to align the RCST antenna, part of the ODU, in order to enable bi-directional communication (uplink, downlink) with the satellite network.

#### [2.2.16.](#) **CW frequency**

The CW frequency is the frequency of a Continuous Wave signal. It is a narrowband carrier transmitted for the duration of measurements during the installation of a RCST.

#### [2.2.17.](#) **Request Class**

A Request Class (RC) is a representation of a Per Hop Behavior (PHB) at the MAC layer. It defines a behavior of the MAC layer for a given aggregation of traffic. This behavior includes a combination of Capacity Categories associated to the RC and a Priority with respect to the other RCs supported by a RCST.

#### **2.2.18. Channel ID**

Each Request Class is identified by a unique Channel\_ID in the communication between the RCST and the NCC.

#### **2.2.19. ATM profile**

The ATM profile is one of the two profiles for traffic burst format on a DVB-RCS uplink. It is based on one or more concatenated ATM cells, each of length 53 bytes, plus an optional prefix.

#### **2.2.20. MPEG profile**

The MPEG profile is one of the two profiles for traffic burst format on the DVB-RCS uplink. It is based on a number of concatenated MPEG2-TS packets, each of length 188 bytes.

#### **2.2.21. PID pool**

For the MPEG profile several RCs may be mapped within a pool of several PIDs to allow cross-RC Section Packing [[RFC4259](#)]. Section packing can be used on all PIDs and higher priority traffic can always pre-empt lower priority streams. This reduces the need for padding.

#### **2.2.22. Capacity Categories**

The TDMA timeslot allocation process for the DVB-RCS uplink supports several capacity categories.

The Capacity Categories CRA, RBDC and A/VBDC, when authorized for a RC, have to be configured from the NCC. These configuration parameters are used to inform the RCST of the configuration of each Category at the NCC side and thus help in Capacity Requests computation.

The configuration of these parameters is performed for each RC. A SatLabs optional feature is defined that allows their configuration at the RCST level in addition to configuration per RC. This feature is denoted RCST\_PARA.

##### **2.2.22.1. Continuous Rate Assignment (CRA)**

CRA is a rate capacity that is provided in full in a continuous manner to the RCST while required.



#### **2.2.22.2. Rate-Based Dynamic Capacity (RBDC)**

RBDC is rate capacity that is requested dynamically by an RCST. RBDC capacity is provided in response to explicit requests from the RCST to the NCC, such requests being absolute (i.e. corresponding to the full rate currently being requested). Each request overrides all previous RBDC requests from the same RCST, and is subject to a maximum rate limit.

#### **2.2.22.3. Volume-Based Dynamic Capacity (VBDC)**

VBDC is volume capacity that is requested dynamically by an RCST. VBDC capacity is provided in response to explicit requests from the RCST to the NCC, such requests being cumulative (i.e. each request adds to all previous requests from the same RCST).

#### **2.2.22.4. Absolute Volume-Based Dynamic Capacity (AVBDC)**

AVBDC is volume capacity that is requested dynamically by an RCST. This capacity is provided in response to explicit requests from the RCST to the NCC, such requests being absolute (i.e. this request replaces the previous ones from the same RCST).

The combination of AVBDC and VBDC is seen as a single Capacity Category, denoted A/VBDC.

#### **2.2.22.5. Population ID**

This defines a group of RCSTs within a Network.

#### **2.2.23. Start transponder**

This is the satellite transponder on which the communication is initiated from a RCST point-of-view when in the installation mode. The parameters corresponding to this transponder (satellite orbital position, frequency, etc.) are stored at the RCST as power-up configuration data.

#### **2.2.24. DVB-S**

DVB-S is the Digital Video Broadcast over Satellite [[ETSI-DVBS](#)]. It is a framework and set of associated standards published by ETSI for the transmission of video, audio, and data, using the ISO MPEG-2 Standard [[ISO-MPEG](#)], over satellite links.





### **2.2.25. DVB-S2 and CCM/VCM/ACM**

DVB-S2 is the Second Generation of the Digital Video Broadcast for Satellite applications standard [[ETSI-DVBS2](#)]. It is a framework and set of associated standards published by ETSI for the transmission of video, audio and data.

BBFRAME: The main framing unit of the DVB-S2 protocol stack.

CCM: In CCM transmission mode, the forward link uses a constant set of transmission parameters (FEC coding rate and modulation scheme) for all receivers.

VCM: In VCM transmission mode, the forward link uses transmission parameters which are variable on a BBFRAME-by-BBFRAME, but fixed on a Receiver basis, according to fixed link and propagation conditions for each Receiver.

ACM: In ACM transmission mode, the forward link uses transmission parameters which are dynamically adjusted on a BBFRAME-by-BBFRAME and Receiver-per-Receiver basis, according to actual link and propagation conditions. In order to implement ACM, feedback from each Receiver has to be provided by DVB-RCS return channel.

### **2.2.26. Interactive Network**

This is another name for a DVB-RCS based satellite network.

## **3. MIB Module overview**

This MIB module provides a set of objects required for the management of SatLabs-compliant RCST. The specification is derived from the parameters and protocols described in [[SATLABS](#)].

The MIB module in this document uses the following OBJECT IDENTIFIER values as already assigned by IANA under the smi-numbers registry [[IANA](#)]:

+-----+-----+		
Descriptor	OBJECT IDENTIFIER	value
+-----+-----+		
dvbRcsMib	{ mib-2 transmission 239 }	
+-----+-----+		

TABLE 1: Object Identifiers for the MIB

These values have been assigned for this MIB under the 'mib-2.transmission' subtree.

### 3.1. Textual Conventions

This MIB module defines new textual conventions for RCST indications of SatLabs defined capabilities, including profiles, options and optional features.

DvbRcsSystemSatLabsProfileMap represents the SatLabs profiles supported as defined in [[SATLABS](#)].

DvbRcsSystemSatLabsOptionMap represents the SatLabs options supported as defined in [[SATLABS](#)]. These are options that are used for the certification of SatLabs terminals. They represent important functionality, with impact on interoperability, and their support is advertised with the RCST certification level.

DvbRcsSystemSatLabsFeatureMap represents the SatLabs optional features supported as defined in [[SATLABS](#)]. These represent minor features, not necessary for interoperability. They are not used for the certification of SatLabs terminals.

### 3.2. Structure of the MIB

This MIB module is structured into two top level groups:

- o The dvbRcsMibObjects group includes all the managed objects of the DVB-RCS MIB.
- o The dvbRcsConformance group includes the compliance statements for DVB-RCS terminals that are compliant with [[SATLABS](#)]. The managed objects are grouped into formal object groups (i.e. units of conformance) according to the relation to specific SatLabs options or features. The conformance statements (MODULE-COMPLIANCE specification) are described within the dvbRcsRcstCompliances group while the units of conformance are described within the dvbRcsRcstGroups group.



The dvbRcsMibObjects group is further structured into three groups: dvbRcsRcst, dvbRcsFwdLink and dvbRcsRtnLink.

The dvbRcsRcst group covers management related to the RCST equipment. It is structured into six groups:

- o dvbRcsRcstSystem
- o dvbRcsRcstNetwork
- o dvbRcsRcstInstall
- o dvbRcsRcstQos
- o dvbRcsRcstControl
- o dvbRcsRcstState

The dvbRcsFwdLink group covers management information related to the RCST forward link. It is structured into two groups:

- o dvbRcsFwdConfig
- o dvbRcsFwdStatus

The dvbRcsRtnLink group covers management information related to the RCST return link. It is structured into two groups:

- o dvbRcsRtnConfig
- o dvbRcsRtnStatus

Tables within each of these groups cover different functions like return link traffic management (packet classes, Request Classes, PID pools) and forward links configuration and status.

Rows created automatically (e.g., by the device according to the hardware configuration) may and generally will have a mixture of configuration and status objects within them. Rows that are meant to be created by the management station are generally restricted to configuration (read-create) objects.

### **3.3. Relationship to the Interfaces MIB Module**

This section clarifies the relationship of this MIB module to the Interfaces MIB [[RFC2863](#)]. Several areas of correlation are addressed in the following. The implementer is referred to the

Interfaces MIB document in order to understand the general intent of these areas.

IANA has assigned three ifType labels for DVB-RCS. Each RCST MUST support at least the three following interfaces:

- o dvbRcsMacLayer (239), -- DVB-RCS MAC Layer

DVB-RCS MAC Layer represents the complete air interface of an RCST, as specified in [[ETSI-RCS](#)]. This interface supports star and mesh networks and is bi-directional. Only star networks are considered by the present MIB module.

- o dvbTdm (240), -- DVB Satellite TDM

DVB-RCS Physical link based on Time Division Multiplexing. It corresponds to the forward link of a RCS transparent system or the downlink of a RCS regenerative system. It is based on either DVB-S or DVB-S2 standard specified in [[ETSI-DVBS](#)] and [[ETSI-DVBS2](#)]. Only transparent systems are considered by the present MIB module.

In the DVB-RCS context, this interface is uni or bi-directional.

In the present MIB module, only a uni-directional (i.e. forward link, or downstream) dvbTdm interface is considered.

- o dvbRcsTdma (241), -- DVB-RCS TDMA

DVB-RCS Physical link based on Time Division Multiple Access. It corresponds to the return or mesh link of a RCS transparent system or the uplink of a RCS regenerative system. It is based on the DVB-RCS standard specified in [[ETSI-RCS](#)].

In the context of star transparent and mesh regenerative DVB-RCS systems, this interface is uni-directional.

In the context of mesh transparent DVB-RCS systems, this interface is bi-directional.

Only star transparent systems are considered by the present MIB module (i.e. return link, or upstream).

The protocol stack (as reflected in ifStackTable) will be as follows:



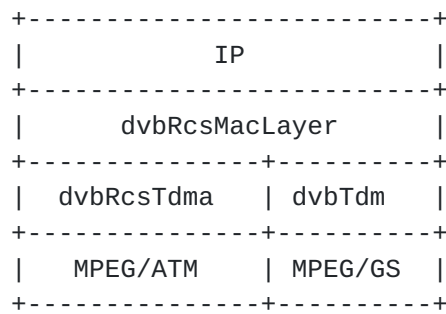


FIGURE 2: RCST protocol stack

An additional Ethernet interface is used on the LAN side of the RCST (see Figure 1).

An instance of ifEntry exists for each dvbTdm interface, for each dvbRcsTdma (normally only one), and for each dvbRcsMac layer (normally only one).

The interface counters relate to:

- o dvbRcsMacLayer: DVB-RCS two-way MAC interface that counts aggregate Multi-Protocol Encapsulation (MPE) frames, Generic Stream Encapsulation (GSE) encapsulated PDUs (equals IP packets), and ATM Adaptation Layer 5 (AAL5) frames.

MPE is specified in [\[ETSI-DAT\]](#) and is transported over MPEG, which is specified in [\[ISO-MPEG\]](#). MPEG is transported over GS or TS (Transport Stream) carriers. The TS carrier is specified in [\[ETSI-DVBS\]](#) for DVB-S and [\[ETSI-DVBS2\]](#) for DVB-S2.

GSE is specified in [\[ETSI-GSE\]](#) and is transported over the GS (Generic Stream) carrier, which is specified in [\[ETSI-DVBS2\]](#).

ATM is specified in [\[ITU-ATM\]](#).

AAL5 is specified in [\[ITU-AAL5\]](#).

- o dvbTdm: The DVB-RCS TDM interface that counts MPEG TS packets at stream level, if the TS format is used. If the Generic Stream (GS) format is used, it counts GSE packets.
- o dvbRcsTdma: The DVB-RCS TDMA interface that counts aggregate ATM and MPEG TS packets.





The ifStackTable [[RFC2863](#)] MUST be implemented to identify the relationships among sub-interfaces.

The following example is a DVB-RCS star network with DVB-S and DVB-RCS. As illustrated on Figure 3, it shows a DVB-RCS MAC interface with one downstream and one upstream interface. In this network, ATM encapsulation is used in the DVB-RCS uplink. Two ATM Logical Ports are shown. DVB-S2 or DVB-S can be used in the downlink.

ifType 214 'mpegTransport' can also be used for counting TS packets and bytes for subinterfaces of dvbRcsTdma or dvbTdm, e.g. per PID oriented or per TS oriented as desired and applicable.

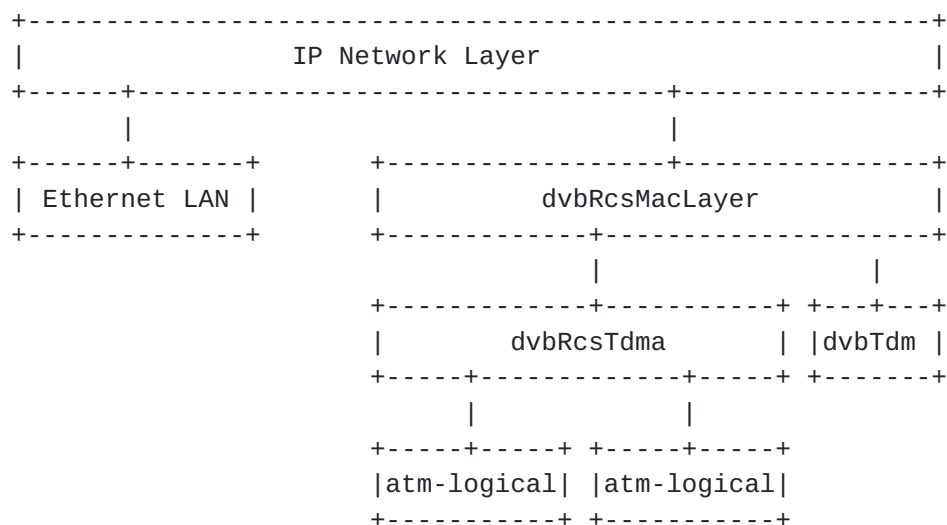


FIGURE 3: Example stacking

As can be seen from this example, the dvbRcsMacLayer interface is layered on top of the downstream and upstream interfaces, and the upstream interface is layered on top of upstream ATM logical links.

In this example, the assignment of index values could be as follows:

ifIndex	ifType	Description
2	dvbRcsMacLayer (239)	DVB-RCS MAC Layer
3	dvbRcsTdma (241)	DVB-RCS TDMA Upstream
4	dvbTdm(240)	DVB-RCS TDM Downstream
5	atm-logical(80)	ATM Logical Port



## 6 atm-logical(80) ATM Logical Port

The corresponding ifStack entries would then be:

+-----+-----+	
IfStackHigherLayer	ifStackLowerLayer
+-----+-----+	
0	1
0	2
1	0
2	3
2	4
3	5
3	6
4	0
5	0
6	0
+-----+-----+	

TABLE 2: Example ifStack entries

### 3.4. MIB groups description

#### 3.4.1. dvbRcsRcstSystem

The MIB objects in this group gather some basic information that would allow anyone to trace the history - the life - of the RCST as well as to get a complete description of its constitution on the component point of view, including the SatLabs options/features support statement. Many of the parameters will be defined at installation.

This group contains description parameters related to the RCST type (ODU type) and location. These parameters are believed to stay unchanged once it has been defined during installation. Modification of hardware equipment, maintenance operations and geographical re-location may require an update of those MIB objects. Note that dvbRcsRcstSystem.dvbRcsSystemLocation object gives the location of the ODU antenna, which is needed for network operation, while the system.sysLocation (MIB-II SNMP OID) provides the location of the IDU unit, which can not be used for the same purpose.

The RCST must provide either Read-Write access to dvbRcsSystemOdu parameters or, alternatively, provide the list



of supported devices through the rcstOduListGroup (see conformance section). This group of parameters, defined in dvbRcsRcstSystem group, allows the selection by the RCST installer of the actual ODU type. In such a case, the installer must set dvbRcsOduTxType, dvbRcsOduRxType and dvbRcsOduAntennaType according to the selected BUC, LNB and antenna respectively.

#### **3.4.2. dvbRcsRcstNetwork**

This group contains all the MIB objects related to network parameters.

In this subgroup, two objects have been defined in order to differentiate between control and user traffic and associate them with a physical interface. Both dvbRcsRcstNetwork.dvbRcsNetworkLanIpAddress (Traffic) and dvbRcsRcstNetwork.dvbRcsNetworkOamIpAddress (OAM) provide the value of the IP address of, respectively, the user traffic and the control and management traffic.

#### **3.4.3. dvbRcsRcstInstall**

This group contains all the information related to the RCST installation and commissioning. Many parameters are believed to stay unchanged once it has been defined during installation. Modification of hardware equipment, maintenance operations and geographical re-location may require an update of those MIB objects.

#### **3.4.4. dvbRcsRcstQos**

This group contains objects to configure the Quality of Service (QoS) of the RCST by the NCC.

The dvbRcsPktClass table defines the packet classification for IP layer 3 classifications. Each dvbRcsPktClass entry is mapped to a dvbRcsPhbEntry in the dvbRcsPhbMappingTable.

The dvbRcsPhbMappingTable makes the relation between a packet classification entry, a Per-Hop Behavior (PHB) identifier and a Request class entry.

The dvbRcsRequestClassTable defines all the layer 2 DVB-RCS QoS parameters.



#### **3.4.5. dvbRcsRcstControl**

This MIB group contains objects a network manager can use to invoke actions and tests supported by the RCST agent and to retrieve the action/test results.

#### **3.4.6. dvbRcsRcstState**

This MIB group describes the fault state, software versions and configuration file versions of the RCST.

#### **3.4.7. dvbRcsFwdLink (dvbRcsFwdConfig and dvbRcsFwdStatus groups)**

This MIB group contains parameters that enable the NCC to have access to data about the forward link.

Configuration information is kept into the dvbRcsFwdLink.dvbRcsFwdConfig subgroup. Status information is kept into the dvbRcsFwdLink.dvbRcsFwdStatus subgroup.

The information in dvbRcsFwdLink.dvbRcsFwdConfig.dvbRcsFwdStartTable is used for the first time the RCST tries to acquire the forward link. All these objects values are aligned with the Satellite Delivery System Descriptor in the Network Information Table (NIT) table [[ETSI-SI](#)].

The objects in the dvbRcsFwdLink.dvbRcsFwdConfig.dvbRcsFwdStatusTable are aligned with the satellite forward path descriptor form the RCS Map Table (RMT) [[ETSI-RCS](#)] and with the Physical Layer (PL) Header [[ETSI-DVBS2](#)], which specified the MODCOD (modulation and FEC rate) and the Type (frame length short of long and the presence/absence of pilots).

#### **3.4.8. dvbRcsRtnLink (dvbRcsRtnConfig and dvbRcsRtnStatus groups)**

This MIB group contains parameters that enable the NCC to have access to data about the return link.

Configuration information is kept into the dvbRcsRtnLink.dvbRcsRtnConfig subgroup. Status information is kept into the dvbRcsRtnLink.dvbRcsRtnStatus subgroup.

The RCST is only able to deal with one return link at a time. Hence, there is no need to define a table to collect the different SNMP objects, as it is done for the forward.





#### 4. Definitions

DVBRCS-MIB DEFINITIONS ::= BEGIN

IMPORTS

```
    MODULE-IDENTITY,
    OBJECT-TYPE,
    Integer32,
    Unsigned32,
    transmission
        FROM SNMPv2-SMI          -- [RFC2578]
    TEXTUAL-CONVENTION,
    RowStatus
        FROM SNMPv2-TC          -- [RFC2579]
    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF        -- [RFC2580]
    SnmpAdminString
        FROM SNMP-FRAMEWORK-MIB -- [RFC3411]
    InetAddressType,
    InetAddress,
    InetAddressPrefixLength,
    InetPortNumber
        FROM INET-ADDRESS-MIB   -- [RFC4001]
    Uri
        FROM URI-TC-MIB         -- [RFC5017]
    Dscp,
    DscpOrAny
        FROM DIFFSERV-DSCP-TC   -- [RFC3289]
    ;
```

dvbRcsMib MODULE-IDENTITY

```
    LAST-UPDATED "200907201200Z"
    ORGANIZATION "The SatLabs Group"
    CONTACT-INFO
        "The SatLabs Group
        Web:      www.satlabs.org
        E-mail:   info@satlabs.org"
    DESCRIPTION
        "DVB-RCS MIB subtree.
```

This MIB module applies to equipment that is a Return Channel Satellite Terminal (RCST) defined in the Digital Video Broadcasting Return Channel via Satellite system (DVB-RCS) standard (ETSI EN 301 791 Digital Video Broadcasting (DVB); Interaction Channel for Satellite Distribution Systems, European Telecommunications Standards Institute (ETSI)).

It defines a set of MIB entities to characterise the behaviour and performance of network layer entities implementing DVB-RCS.

This MIB module is intended to be used by DVB-RCS equipment following the SatLabs System Recommendations, defined by the SatLabs Group and available at [www.satlabs.org](http://www.satlabs.org).

Note that, if not stated otherwise in the object DESCRIPTION clause, all writable objects are persistent."

REVISION "200907201200Z"

DESCRIPTION

"Revision of this MIB module, following MIB doctor review and adjustments based on the MIB authoring guidelines from the IETF."

::= { transmission 239 }

-----  
-- Textual Conventions  
-----

DvbRcsSatLabsProfileMap ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This textual convention enumerates the declaration of the SatLabs defined terminal profiles. The mapping to the profiles is to be understood as described here. (0) refers to the most significant bit.

dvbs(0) -> DVBS profile (DVB-S support)

dvbs2ccm(1) -> DVB-S2 CCM profile (CCM support)

dvbs2acm(2) -> DVB-S2 ACM profile (CCM, VCM and ACM support)"

REFERENCE

"SatLabs System Recommendations available at  
www.satlabs.org"

```
SYNTAX BITS {
    dvbs(0),
    dvbs2ccm(1),
    dvbs2acm(2),
    spare1(3),
    spare2(4),
    spare3(5),
    spare4(6),
    spare5(7),
    spare6(8),
    spare7(9),
    spare8(10),
    spare9(11),
    spare10(12),
    spare11(13),
    spare12(14),
    spare13(15),
    spare14(16),
    spare15(17),
    spare16(18),
    spare17(19),
    spare18(20),
    spare19(21),
    spare20(22),
    spare21(23),
    spare22(24),
    spare23(25),
    spare24(26),
    spare25(27),
    spare26(28),
    spare27(29),
    spare28(30),
    spare29(31)
}
```

DvbRcsSatLabsOptionMap ::= TEXTUAL-CONVENTION  
STATUS current  
DESCRIPTION

"This textual convention enumerates the declaration of the SatLabs defined options. A value of 1 indicates that the respective option is supported. The mapping to the options is to be understood as described here. (0) refers to the most significant bit.

```
mpegTrf(0) -> MPEG_TRF
coarseSync(1) -> COARSE_SYNC
wideHop(2) -> WIDE_HOPP
fastHop(3) -> FAST_HOPP
dynamicMfTdma(4) -> Dynamic_MF_TDMA
contentionSync(5) -> CONTENTION_SYNC
qpskLow(6) -> QPSKLOW
mod16Apsk(7) -> 16APSK
mod32Apsk(8) -> 32APSK
normalFec(9) -> NORMALFEC
multiTs(10) -> MULTITS
gsTs(11) -> GSTS
enhQoS(12) -> ENHQOS
pep(13) -> PEP
http(14) -> HTTP
ftp(15) -> FTP
dns(16) -> DNS
chIdStrict(17) -> CHID_STRICT
nlid(18) -> NLID
snmpMisc(19) -> SNMPMISC
```

The support of specific options mandates the support of specific objects and access levels."

#### REFERENCE

"SatLabs System Recommendations available at  
[www.satlabs.org](http://www.satlabs.org)"

```
SYNTAX BITS {
    mpegTrf(0),
    coarseSync(1),
    wideHop(2),
    fastHop(3),
    dynamicMfTdma(4),
    contentionSync(5),
    qpskLow(6),
    mod16Apsk(7),
```

```
mod32Apsk(8),
normalFec(9),
multiTs(10),
gsTs(11),
enhQoS(12),
pep(13),
http(14),
ftp(15),
dns(16),
chIdStrict(17),
nlid(18),
snmpMisc(19),
spare1(20),
spare2(21),
spare3(22),
spare4(23),
spare5(24),
spare6(25),
spare7(26),
spare8(27),
spare9(28),
spare10(29),
spare11(30),
spare12(31)
}
```

DvbRcsSatLabsFeatureMap ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This textual convention enumerates the declaration of the SatLabs specified compatibility and configuration features. A value of 1 indicates that the respective feature is supported. The mapping to the features is to be understood as described here. (0) refers to the most significant bit.

```
rcstPara(0) -> RCST_PARA feature
installLog(1) -> INSTALL_LOG feature
enhClassifier(2) -> ENHCLASSIFIER feature
routeId(3) -> ROUTE_ID feature
oduList(4) -> ODULIST feature
```

extNetwork(5) -> EXTNETWORK feature  
extControl(6) -> EXTCONTROL feature  
extConfig(7) -> EXTCONFIG feature  
extStatus(8) -> EXTSTATUS feature

The support of specific features mandates the support of specific objects and access levels."

#### REFERENCE

"SatLabs System Recommendations available at  
[www.satlabs.org](http://www.satlabs.org)"

SYNTAX BITS {  
    rcstPara(0),  
    installLog(1),  
    enhClassifier(2),  
    routeId(3),  
    oduList(4),  
    extNetwork(5),  
    extControl(6),  
    extConfig(7),  
    extStatus(8),  
    spare6(9),  
    spare7(10),  
    spare8(11),  
    spare9(12),  
    spare10(13),  
    spare11(14),  
    spare12(15),  
    spare13(16),  
    spare14(17),  
    spare15(18),  
    spare16(19),  
    spare17(20),  
    spare18(21),  
    spare19(22),  
    spare20(23),  
    spare21(24),  
    spare22(25),  
    spare23(26),  
    spare24(27),  
    spare25(28),  
    spare26(29),

```

    spare27(30),
    spare28(31)
}

```

```

=====
-- object type definitions
=====
dvbRcsMibObjects      OBJECT IDENTIFIER ::= {dvbRcsMib 1}
dvbRcsConformance     OBJECT IDENTIFIER ::= {dvbRcsMib 2}

dvbRcsRcst            OBJECT IDENTIFIER ::= {dvbRcsMibObjects 1}
dvbRcsFwdLink         OBJECT IDENTIFIER ::= {dvbRcsMibObjects 2}
dvbRcsRtnLink         OBJECT IDENTIFIER ::= {dvbRcsMibObjects 3}

dvbRcsRcstSystem      OBJECT IDENTIFIER ::= {dvbRcsRcst 1}
dvbRcsRcstNetwork     OBJECT IDENTIFIER ::= {dvbRcsRcst 2}
dvbRcsRcstInstall     OBJECT IDENTIFIER ::= {dvbRcsRcst 3}
dvbRcsRcstQos         OBJECT IDENTIFIER ::= {dvbRcsRcst 4}
dvbRcsRcstControl     OBJECT IDENTIFIER ::= {dvbRcsRcst 5}
dvbRcsRcstState       OBJECT IDENTIFIER ::= {dvbRcsRcst 6}

dvbRcsFwdConfig       OBJECT IDENTIFIER ::= {dvbRcsFwdLink 1}
dvbRcsFwdStatus       OBJECT IDENTIFIER ::= {dvbRcsFwdLink 2}

dvbRcsRtnConfig       OBJECT IDENTIFIER ::= {dvbRcsRtnLink 1}
dvbRcsRtnStatus       OBJECT IDENTIFIER ::= {dvbRcsRtnLink 2}

=====
--      dvbRcsRcstSystem sub-tree object types
=====
dvbRcsSystemMibRevision  OBJECT-TYPE
    SYNTAX                 SnmpAdminString
    MAX-ACCESS              read-only
    STATUS                  current
    DESCRIPTION
        "This object allows the SNMP agent to report the
        implemented MIB module revision.
        The supported REVISION of this module is reported."
    ::= {dvbRcsRcstSystem 1}

=====

```

```
-- Options declared according to the textual conventions
=====
dvbRcsSystemSatLabsProfilesDeclaration OBJECT-TYPE
    SYNTAX          DvbRcsSatLabsProfileMap
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Indicates the SatLabs profiles supported as defined in
        the SatLabs System Recommendations."
    ::= {dvbRcsRcstSystem 2}

dvbRcsSystemSatLabsOptionsDeclaration OBJECT-TYPE
    SYNTAX          DvbRcsSatLabsOptionMap
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Indicates the SatLabs options supported as defined in
        the SatLabs System Recommendations."
    ::= {dvbRcsRcstSystem 3}

dvbRcsSystemSatLabsFeaturesDeclaration OBJECT-TYPE
    SYNTAX          DvbRcsSatLabsFeatureMap
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Indicates the optional compatibility features and minor
        options supported as defined in the SatLabs System
        Recommendations."
    ::= {dvbRcsRcstSystem 4}

dvbRcsSystemLocation OBJECT-TYPE
    SYNTAX          SnmpAdminString
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "Physical location of the ODU antenna expressed as
        Longitude, Latitude and Altitude. The string
        shall have 31 characters in the following format:
        <xxxx.xxx>,<a>,<yyyyy.yyy>,<b>,<zzzz.z>,M
        where x, y and z represents digits,
        a=N or S,
```



b=E or W,  
Reading the digits from left to right:  
'x' 7 latitude digits; x digits 1-2 contain the  
degrees, x digits 3-7 contain the minutes in decimal;  
'y' 8 longitude digits; y digits 1-3 contain the  
degrees, y digits 4-8 contain the minutes in decimal;  
'z' 5 altitude digits; meters above sea level in  
decimal;  
'.' is the decimal point;  
' ,' is the field separator;  
'M' is the indicator for altitude meters.

This format is a modified subset of the NMEA 0183  
(National Marine Electronics Association, Interface  
Standard) format for Global Positioning System Fix  
Data.

This location and the satellite position are used to  
calculate the RCST-satellite path delay.

Note: The system.sysLocation object of MIB-II provides  
physical location of the IDU unit."

::= {dvbRcsRcstSystem 5}

dvbRcsSystemOduAntennaSize OBJECT-TYPE

SYNTAX	Unsigned32
UNITS	"cm"
MAX-ACCESS	read-write
STATUS	current
DESCRIPTION	

"Diameter of the antenna."

::= {dvbRcsRcstSystem 6}

dvbRcsSystemOduAntennaGain OBJECT-TYPE

SYNTAX	Unsigned32
UNITS	"x0.1 dBi"
MAX-ACCESS	read-write
STATUS	current
DESCRIPTION	

"Antenna peak gain of the ODU."

::= {dvbRcsRcstSystem 7}

## dvbRcsSystemOduSspa OBJECT-TYPE

SYNTAX Unsigned32

UNITS "x0.1 W"

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"Power level of the Solid State Power Amplifier  
installed in the ODU."

::= {dvbRcsRcstSystem 8}

## dvbRcsSystemOduTxType OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"Type of transmitter installed in the ODU."

::= {dvbRcsRcstSystem 9}

## dvbRcsSystemOduRxType OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"Type of LNB installed in the ODU, with  
information such as vendor type, output type (single,  
twin, quad,...), etc."

::= {dvbRcsRcstSystem 10}

## dvbRcsSystemOduRxBand OBJECT-TYPE

SYNTAX INTEGER {  
oduHighRxBand (0),  
oduLowRxBand (1)  
}

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"LNB High-Band/Low-Band selector. High Band corresponds  
to the emission of a 18-26 kHz tone with 0.4-0.8 Vpp in  
the Rx IFL cable:

(0) - High Band

```
(1)      - Low Band"
 ::= {dvbRcsRcstSystem 11}

dvbRcsSystemOduRxLO OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS        "x100 Hz"
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "Frequency of LNB Local Oscillator (in 100 Hz)"
 ::= {dvbRcsRcstSystem 12}

dvbRcsSystemOduTxLO OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS        "x100 Hz"
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "Frequency of Block Up-Converter Local Oscillator
         (in 100 Hz)."
 ::= {dvbRcsRcstSystem 13}

dvbRcsSystemIduPep OBJECT IDENTIFIER ::= {dvbRcsRcstSystem 14}

dvbRcsTcpPep OBJECT-TYPE
    SYNTAX      INTEGER{
                    disabled (0),
                    enabled (1)
                }
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "Status and control of embedded TCP PEP.
         0 - disabled or not implemented
         1 - enabled"
 ::= {dvbRcsSystemIduPep 1}

dvbRcsHttpPep OBJECT-TYPE
    SYNTAX      INTEGER{
                    disabled (0),
                    enabled (1)
                }
```

```

    }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "Status and control of embedded HTTP PEP.
         0 - disabled or not implemented
         1 - enabled"
 ::= {dvbRcsSystemIduDpep 2}

--=====
-- ODU structural entities
--=====

dvbRcsOduTx      OBJECT IDENTIFIER ::= {dvbRcsRcstSystem 15}
dvbRcsOduRx      OBJECT IDENTIFIER ::= {dvbRcsRcstSystem 16}
dvbRcsOduAntenna OBJECT IDENTIFIER ::= {dvbRcsRcstSystem 17}

--=====
-- ODU BUC
--=====

dvbRcsOduTxTypeTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF DvbRcsOduTxTypeEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains the identification of each well-
         known BUC type supported by the IDU, and provides its
         associated index."
 ::= {dvbRcsOduTx 1}

dvbRcsOduTxTypeEntry OBJECT-TYPE
    SYNTAX      DvbRcsOduTxTypeEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry in the BUC type table."
    INDEX      { dvbRcsOduTxTypeIndex }
 ::= {dvbRcsOduTxTypeTable 1}

DvbRcsOduTxTypeEntry ::= SEQUENCE {

```

```

        dvbRcsOduTxTypeIndex      Unsigned32,
        dvbRcsOduTxTypeDescription SnmpAdminString
    }

```

dvbRcsOduTxTypeIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..32)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Index for the BUC type."

::={dvbRcsOduTxTypeEntry 1}

dvbRcsOduTxTypeDescription OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Text based identification of a BUC type."

::={dvbRcsOduTxTypeEntry 2}

dvbRcsOduTxType OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Index of the selected BUC type."

::={dvbRcsOduTx 2}

```

--=====
-- ODU LNB
--=====

```

dvbRcsOduRxTypeTable OBJECT-TYPE

SYNTAX SEQUENCE OF DvbRcsOduRxTypeEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains the identification of each well-known LNB type supported by the IDU, and provides its associated index."

::={dvbRcsOduRx 1}

```
dvbRcsOduRxTypeEntry OBJECT-TYPE
    SYNTAX          DvbRcsOduRxTypeEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "An entry in the LNB type table."
    INDEX           { dvbRcsOduRxTypeIndex }
    ::= { dvbRcsOduRxTypeTable 1}

DvbRcsOduRxTypeEntry ::= SEQUENCE {
    dvbRcsOduRxTypeIndex      Unsigned32,
    dvbRcsOduRxTypeDescription  SnmpAdminString
}

dvbRcsOduRxTypeIndex OBJECT-TYPE
    SYNTAX          Unsigned32 (1..32)
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "Index for the LNB type."
    ::= { dvbRcsOduRxTypeEntry 1}

dvbRcsOduRxTypeDescription OBJECT-TYPE
    SYNTAX          SnmpAdminString
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Text based identification of an LNB type."
    ::= { dvbRcsOduRxTypeEntry 2}

dvbRcsOduRxType OBJECT-TYPE
    SYNTAX          Unsigned32
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "Index of the selected LNB type."
    ::= { dvbRcsOduRx 2}

--=====
-- ODU Antenna
```

--=====

dvbRcsOduAntennaTypeTable OBJECT-TYPE

SYNTAX SEQUENCE OF DvbRcsOduAntennaTypeEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains the identification of each well-known antenna type supported by the IDU, and provides its associated index."

::={dvbRcsOduAntenna 1}

dvbRcsOduAntennaTypeEntry OBJECT-TYPE

SYNTAX DvbRcsOduAntennaTypeEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the antenna type table."

INDEX { dvbRcsOduAntennaTypeIndex }

::={dvbRcsOduAntennaTypeTable 1}

DvbRcsOduAntennaTypeEntry ::= SEQUENCE {

dvbRcsOduAntennaTypeIndex Unsigned32,

dvbRcsOduAntennaTypeDescription SnmpAdminString

}

dvbRcsOduAntennaTypeIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..32)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Index for the antenna type."

::={dvbRcsOduAntennaTypeEntry 1}

dvbRcsOduAntennaTypeDescription OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Text based identification of an antenna type."

::={dvbRcsOduAntennaTypeEntry 2}

```
dvbRcsOduAntennaType OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "Index of the selected antenna type."
 ::= {dvbRcsOduAntenna 2}

-----
-- dvbRcsRcstNetwork sub-tree object types
-----

dvbRcsNetworkOamInetAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "The type of internet address of
         dvbRcsNetworkOamInetAddress.
         If the terminal OAM Internet address is unassigned or
         unknown, then the value of this object is unknown(0)."
 ::= {dvbRcsRcstNetwork 1}

dvbRcsNetworkOamInetAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "OAM IP Address of the RCST. This object is used with
         both IP and interfaces MIB-II subgroups. It uniquely
         determines the interface through which OAM traffic
         passes.
         The OAM IP address may be statically or dynamically
         assigned. It is system dependent whether the OAM IP
         address and the Traffic IP address are the same address.
         If the terminal has no OAM Internet address assigned, or
         this Internet address is unknown, the value of this
         object is the zero-length OCTET STRING.
         The InetAddressType is given by the
         dvbRcsNetworkOamInetAddressType object. "
```



::= {dvbRcsRcstNetwork 2}

dvbRcsNetworkOamInetAddressPrefixLength OBJECT-TYPE

SYNTAX InetAddressPrefixLength

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Prefix length for the OAM IP Address. If this address  
prefix is unknown or does not apply, the value is zero."

::= {dvbRcsRcstNetwork 3}

dvbRcsNetworkOamInetAddressAssign OBJECT-TYPE

SYNTAX INTEGER {  
oamInetAddressStatic (1),  
oamInetAddressDynamic (2)  
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Identifies whether the OAM IP address is statically  
(1) or dynamically (2) assigned."

::= {dvbRcsRcstNetwork 4}

dvbRcsNetworkLanInetAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The type of internet address of  
dvbRcsNetworkLanInetAddress.  
If the terminal Internet address on the LAN interface is  
unassigned or unknown, then the value of this object is  
unknown(0)."

::= {dvbRcsRcstNetwork 5}

dvbRcsNetworkLanInetAddress OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"IP address of the LAN interface of the terminal. If the

terminal has no Internet address assigned on the LAN interface, or this Internet address is unknown, the value of this object is the zero-length OCTET STRING. The InetAddressType is given by the dvbRcsNetworkLanInetAddressType object."

::= {dvbRcsRcstNetwork 6}

dvbRcsNetworkLanInetAddressPrefixLength OBJECT-TYPE

SYNTAX	InetAddressPrefixLength
MAX-ACCESS	read-write
STATUS	current

DESCRIPTION

"Prefix length for the LAN IP Address of the terminal. If this address prefix is unknown or does not apply, the value is zero."

::= {dvbRcsRcstNetwork 7}

dvbRcsNetworkAirInterfaceDefaultGatewayInetAddressType OBJECT-TYPE

SYNTAX	InetAddressType
MAX-ACCESS	read-write
STATUS	current

DESCRIPTION

"The type of internet address of dvbRcsNetworkAirInterfaceDefaultGatewayInetAddress. If the default gateway Internet address is unassigned or unknown, then the value of this object is unknown(0)."

::= {dvbRcsRcstNetwork 8}

dvbRcsNetworkAirInterfaceDefaultGatewayInetAddress OBJECT-TYPE

SYNTAX	InetAddress
MAX-ACCESS	read-write
STATUS	current

DESCRIPTION

"IP address of the default gateway for the air interface. If the terminal has no default gateway assigned on the air interface, or this Internet address is unknown, the value of this object is the zero-length OCTET STRING. The InetAddressType is given by the dvbRcsNetworkAirInterfaceDefaultGatewayInetAddressType

```
        object."
 ::= {dvbRcsRcstNetwork 9}

dvbRcsNetworkAirInterfaceDefaultGatewayInetAddressPrefixLength
OBJECT-TYPE
    SYNTAX          InetAddressPrefixLength
    MAX-ACCESS       read-write
    STATUS           current
    DESCRIPTION
        "Prefix length for the IP address of the default gateway
        for the air interface.
        If this address prefix is unknown or does not apply, the
        value is zero."
 ::= {dvbRcsRcstNetwork 10}

dvbRcsNetworkDnsServers OBJECT IDENTIFIER ::= {dvbRcsRcstNetwork
11}

dvbRcsPrimaryDnsServerInetAddressType OBJECT-TYPE
    SYNTAX          InetAddressType
    MAX-ACCESS       read-write
    STATUS           current
    DESCRIPTION
        "The type of internet address of
        dvbRcsPrimaryDnsServerInetAddress. If the primary DNS
        server Internet address is unassigned or unknown, then
        the value of this object is unknown(0)."
 ::= { dvbRcsNetworkDnsServers 1}

dvbRcsPrimaryDnsServerInetAddress OBJECT-TYPE
    SYNTAX          InetAddress
    MAX-ACCESS       read-write
    STATUS           current
    DESCRIPTION
        "IP address of the primary DNS server in the NCC. If
        the terminal has no primary DNS server assigned, or this
        Internet address is unknown, the value of this object is
        the zero-length OCTET STRING.
        The InetAddressType is given by the
        dvbRcsPrimaryDnsServerInetAddressType object."
 ::= {dvbRcsNetworkDnsServers 2}
```

dvbRcsPrimaryDnsServerInetAddressPrefixLength OBJECT-TYPE  
SYNTAX InetAddressPrefixLength  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"Prefix length for the IP address of the primary DNS  
server in the NCC.  
If this address prefix is unknown or does not apply, the  
value is zero."  
::= { dvbRcsNetworkDnsServers 3}

dvbRcsSecondaryDnsServerInetAddressType OBJECT-TYPE  
SYNTAX InetAddressType  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"The type of internet address of  
dvbRcsSecondaryDnsServerInetAddress. If the secondary  
DNS server Internet address is unassigned or unknown,  
then the value of this object is unknown(0)."  
::= { dvbRcsNetworkDnsServers 4}

dvbRcsSecondaryDnsServerInetAddress OBJECT-TYPE  
SYNTAX InetAddress  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"IP address of the secondary DNS server in the NCC. If  
the terminal has no secondary DNS server assigned, or  
this Internet address is unknown, the value of this  
object is the zero-length OCTET STRING.  
The InetAddressType is given by the  
dvbRcsSecondaryDnsServerInetAddressType object."  
::= {dvbRcsNetworkDnsServers 5}

dvbRcsSecondaryDnsServerInetAddressPrefixLength OBJECT-TYPE  
SYNTAX InetAddressPrefixLength  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION

"Prefix length for the IP address of the secondary DNS server in the NCC.  
If this address prefix is unknown or does not apply, the value is zero."

::= { dvbRcsNetworkDnsServers 6}

dvbRcsNetworkNccMgtInetAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The type of internet address of dvbRcsNetworkNccMgtInetAddress. If the management server Internet address is unassigned or unknown, then the value of this object is unknown(0)."

::= {dvbRcsRcstNetwork 12}

dvbRcsNetworkNccMgtInetAddress OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"IP address of the management server in the NCC. If the terminal has no management server assigned, or this Internet address is unknown, the value of this object is the zero-length OCTET STRING.  
The InetAddressType is given by the dvbRcsNetworkNccMgtInetAddressType object."

::= {dvbRcsRcstNetwork 13}

dvbRcsNetworkNccMgtInetAddressPrefixLength OBJECT-TYPE

SYNTAX InetAddressPrefixLength

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Prefix length for the IP address of the management server in the NCC.  
If this address prefix is unknown or does not apply, the value is zero."

::= { dvbRcsRcstNetwork 14}

**dvbRcsNetworkConfigFileDownloadUrl OBJECT-TYPE**

SYNTAX                   Uri (SIZE(0..65535))

MAX-ACCESS               read-write

STATUS                   current

**DESCRIPTION**

"Full path name for the configuration file download.

It includes the protocol type (tftp or ftp) and the associated server IP address or hostname. Hostname can only be used if DNS is supported by the RCST.

The format of this parameter follows [RFC 3986](#)."

::= {dvbRcsRcstNetwork 15}

**dvbRcsNetworkInstallLogFileDownloadUrl OBJECT-TYPE**

SYNTAX                   Uri (SIZE(0..65535))

MAX-ACCESS               read-write

STATUS                   current

**DESCRIPTION**

"Full path of the installation log file to download.

It includes the protocol type (tftp or ftp) and the associated server IP address or hostname. Hostname can only be used if DNS is supported by the RCST. The installation log file can be created on the installer's computer and downloaded to the RCST.

The format of this parameter follows [RFC 3986](#)."

::= {dvbRcsRcstNetwork 16}

**dvbRcsNetworkConfigFileUploadUrl OBJECT-TYPE**

SYNTAX                   Uri(SIZE(0..65535))

MAX-ACCESS               read-write

STATUS                   current

**DESCRIPTION**

"Full path name for the configuration file upload.

It includes the protocol type (tftp or ftp) and the associated server IP address or hostname. Hostname can only be used if DNS is supported by the RCST.

The format of this parameter follows [RFC 3986](#)."

::= {dvbRcsRcstNetwork 17}

**dvbRcsNetworkLogFileUploadUrl OBJECT-TYPE**

SYNTAX                   Uri(SIZE(0..65535))

MAX-ACCESS               read-write

STATUS current

DESCRIPTION

"Full path of the event log file. It includes the protocol type (tftp or ftp) and the associated server IP address or hostname. Hostname can only be used if DNS is supported by the RCST.

The format of this parameter follows [RFC 3986](#)."

::= {dvbRcsRcstNetwork 18}

dvbRcsNetworkInstallLogFileUploadUrl OBJECT-TYPE

SYNTAX Uri(SIZE(0..65535))

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Full path of the installation log file. It includes the protocol type (tftp or ftp) and the associated server IP address or hostname. Hostname can only be used if DNS is supported by the RCST. The installation log file can be retrieved from the RCST by the NCC or by the installer via the LAN.

The format of this parameter follows [RFC 3986](#)."

::= {dvbRcsRcstNetwork 19}

```

=====
--      dvbRcsRcstInstall sub-tree object types
=====

```

dvbRcsInstallAntennaAlignmentState OBJECT-TYPE

SYNTAX INTEGER {  
     antennaAlignmentStart (1),  
     antennaAlignmentDeny (2),  
     antennaAlignmentContinue(3),  
     antennaAlignmentStop (4),  
     antennaAlignmentSuccess (5),  
     antennaAlignmentFail (6)

}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Indicates the alignment state of the antenna:

(1)-Start;

(2)-Deny;

```
        (3)-Continue;
        (4)-Stop;
        (5)-Success;
        (6)-Fail"
 ::= {dvbRcsRcstInstall 1}

dvbRcsInstallCwFrequency OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS        "x100 Hz"
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "Frequency at which the transmitted Continuous Wave
        carrier (in 100 Hz).
        Minimum required precision is 1 kHz."
 ::= {dvbRcsRcstInstall 2}

dvbRcsInstallCwMaxDuration OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS        "seconds"
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "Time after which the Continuous Wave carrier must be
        put down (in seconds)"
 ::= {dvbRcsRcstInstall 3}

dvbRcsInstallCwPower OBJECT-TYPE
    SYNTAX      Integer32
    UNITS        "x0.1 dBm"
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "IDU TX output level when the IDU is configured to send
        CW. The resolution is 0.1 dBm and the accuracy is +/- 1
        dBm. Reconfiguration is applied immediately to a CW."
 ::= {dvbRcsRcstInstall 4}

dvbRcsInstallCoPolReading OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS        "x0.1 dB"
```



```
MAX-ACCESS      read-write
STATUS          current
DESCRIPTION
    "Co-Polarisation measured value during installation
    procedure (in 0.1 dB)"
::= {dvbRcsRcstInstall 5}

dvbRcsInstallXPolReading OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "x0.1 dB"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Cross-Polarisation measured value during installation
        procedure (in 0.1 dB)"
    ::= {dvbRcsRcstInstall 6}

dvbRcsInstallCoPolTarget OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "x0.1 dB"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Co-Polarisation target value during installation
        procedure (in 0.1 dB)."
    ::= {dvbRcsRcstInstall 7}

dvbRcsInstallXPolTarget OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "x0.1 dB"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Cross-Polarisation target value during installation
        procedure (in 0.1 dB)"
    ::= {dvbRcsRcstInstall 8}

dvbRcsInstallStandByDuration OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "seconds"
    MAX-ACCESS  read-write
```

```

        STATUS                current
        DESCRIPTION
            "Time to wait in stand-by mode (in seconds)"
 ::= {dvbRcsRcstInstall 9}

dvbRcsInstallTargetEsN0 OBJECT-TYPE
    SYNTAX                Unsigned32(0..315)
    UNITS                  "x0.1 dB"
    MAX-ACCESS             read-write
    STATUS                 current
    DESCRIPTION
        "This value describes the wanted Es/N0 value that
         enables operation of the return link with the required
         error performance. The values shall be given in tenth of
         dB and the initial value shall be equal to 7 dB. The
         range shall be from 0 dBm to 31.5 dBm with a precision
         of 0.1 dB."
    DEFVAL                 { 70 }
 ::= {dvbRcsRcstInstall 10}

-----
-- dvbRcsRcstQos sub-tree object types
-----

dvbRcsPktClassTable OBJECT-TYPE
    SYNTAX                SEQUENCE OF DvbRcsPktClassEntry
    MAX-ACCESS             not-accessible
    STATUS                 current
    DESCRIPTION
        "This table describes the packet classification used in
         the DVB-RCS terminal. The number of entries is specified
         by dvbRcsPktClassIndex. "
 ::= {dvbRcsRcstQos 1}

dvbRcsPktClassEntry OBJECT-TYPE
    SYNTAX                DvbRcsPktClassEntry
    MAX-ACCESS             not-accessible
    STATUS                 current
    DESCRIPTION
        "An entry in the packet classification table. One object
         type of each entry may have a value in the active range
         (a non-default value).The other object types are then

```

assumed set to 'inactive'. The entry with the lowest index value takes precedence when classifying a packet."

```

INDEX    { dvbRcsPktClassIndex }
 ::= { dvbRcsPktClassTable 1}

DvbRcsPktClassEntry ::= SEQUENCE {
    dvbRcsPktClassIndex          Unsigned32,
    dvbRcsPktClassDscpLow        Dscp,
    dvbRcsPktClassDscpHigh       Dscp,
    dvbRcsPktClassDscpMarkValue  DscpOrAny,
    dvbRcsPktClassIpProtocol     Unsigned32,
    dvbRcsPktClassSrcInetAddress InetAddressType,
    dvbRcsPktClassSrcInetAddress InetAddress,
    dvbRcsPktClassSrcInetAddressPrefixLength
                                InetAddressPrefixLength,
    dvbRcsPktClassDstInetAddress InetAddressType,
    dvbRcsPktClassDstInetAddress InetAddress,
    dvbRcsPktClassDstInetAddressPrefixLength
                                InetAddressPrefixLength,
    dvbRcsPktClassSrcPortLow     InetPortNumber,
    dvbRcsPktClassSrcPortHigh    InetPortNumber,
    dvbRcsPktClassDstPortLow     InetPortNumber,
    dvbRcsPktClassDstPortHigh    InetPortNumber,
    dvbRcsPktClassVlanUserPri    Integer32,
    dvbRcsPktClassPhbAssociation Unsigned32,
    dvbRcsPktClassRowStatus      RowStatus
}

dvbRcsPktClassIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..64)
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "Index automatically incremented by one at row
        creation."
    ::= {dvbRcsPktClassEntry 1}

dvbRcsPktClassDscpLow OBJECT-TYPE
    SYNTAX      Dscp
    MAX-ACCESS   read-create
    STATUS       current

```

## DESCRIPTION

"This object specifies the low value of a range of DiffServ Code Point (DSCP) values to which a packet is compared."

DEFVAL { 0 }

::={dvbRcsPktClassEntry 2}

## dvbRcsPktClassDscpHigh OBJECT-TYPE

SYNTAX Dscp

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"This object specifies the high value of a range of DiffServ Code Point (DSCP) values to which a packet is compared."

DEFVAL { 63 }

::={dvbRcsPktClassEntry 3}

## dvbRcsPktClassDscpMarkValue OBJECT-TYPE

SYNTAX DscpOrAny

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"This object is the DiffServ Code Point (DSCP) value used to mark the packet, -1 indicates no DSCP marking. Possible DSCP marks values are (0..63)"

DEFVAL { -1 }

::={dvbRcsPktClassEntry 4}

## dvbRcsPktClassIpProtocol OBJECT-TYPE

SYNTAX Unsigned32 (0..255)

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"This object specifies the IP protocol to which a packet is compared. A value of 255 means match all."

DEFVAL { 255 }

::={dvbRcsPktClassEntry 5}

## dvbRcsPktClassSrcInetAddressType OBJECT-TYPE

SYNTAX InetAddressType

```
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    "The type of internet address of
    dvbRcsPktClassSrcInetAddress. If the packet class source
    Internet address is unassigned or unknown, then the
    value of this object is unknown(0)."
```

::= { dvbRcsPktClassEntry 6}

**dvbRcsPktClassSrcInetAddress OBJECT-TYPE**

```
SYNTAX          InetAddress
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "This object specifies the IP source address to which a
    packet is compared. If the packet class has no source
    Internet address assigned, or this Internet address is
    unknown, the value of this object is the zero-length
    OCTET STRING.
    The InetAddressType is given by the
    dvbRcsPktClassSrcInetAddressType object."
```

::={dvbRcsPktClassEntry 7}

**dvbRcsPktClassSrcInetAddressPrefixLength OBJECT-TYPE**

```
SYNTAX          InetAddressPrefixLength
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "Prefix length of the IP source address that will be
    matched for this packet class. A value of zero indicates
    that the selectivity is inactive."
```

DEFVAL { 0 }

::={dvbRcsPktClassEntry 8}

**dvbRcsPktClassDstInetAddressType OBJECT-TYPE**

```
SYNTAX          InetAddressType
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "The type of internet address of
```

dvbRcsPktClassDstInetAddress. If the packet class destination Internet address is unassigned or unknown, then the value of this object is unknown(0)."

```
::= { dvbRcsPktClassEntry 9}
```

dvbRcsPktClassDstInetAddress OBJECT-TYPE

SYNTAX                      InetAddress  
MAX-ACCESS                  read-create  
STATUS                      current

DESCRIPTION

"This object specifies the IP destination address to which a packet is compared. If the packet class has no destination Internet address assigned, or this Internet address is unknown, the value of this object is the zero-length OCTET STRING.

The InetAddressType is given by the dvbRcsPktClassDstInetAddressType object."

```
::={dvbRcsPktClassEntry 10}
```

dvbRcsPktClassDstInetAddressPrefixLength OBJECT-TYPE

SYNTAX                      InetAddressPrefixLength  
MAX-ACCESS                  read-create  
STATUS                      current

DESCRIPTION

"Prefix length of the IP source address that will be matched for this packet class. A value of zero indicates that the selectivity is inactive."

DEFVAL { 0 }

```
::={dvbRcsPktClassEntry 11}
```

dvbRcsPktClassSrcPortLow OBJECT-TYPE

SYNTAX                      InetPortNumber  
MAX-ACCESS                  read-create  
STATUS                      current

DESCRIPTION

"This object specifies the low range of the source port to which a packet is compared. A value of 0 indicates that the selectivity is inactive."

DEFVAL { 0 }

```
::={dvbRcsPktClassEntry 12}
```

dvbRcsPktClassSrcPortHigh OBJECT-TYPE  
SYNTAX InetPortNumber  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
    "This object specifies the high range of the source port  
    to which a packet is compared. A value of 0 indicates  
    that the selectivity is inactive."  
DEFVAL { 65535 }  
::={dvbRcsPktClassEntry 13}

dvbRcsPktClassDstPortLow OBJECT-TYPE  
SYNTAX InetPortNumber  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
    "This object specifies the low range of the destination  
    port to which a packet is compared. A value of 0  
    indicates that the selectivity is inactive."  
DEFVAL { 0 }  
::={dvbRcsPktClassEntry 14}

dvbRcsPktClassDstPortHigh OBJECT-TYPE  
SYNTAX InetPortNumber  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
    "This object specifies the high range of the destination  
    port to which a packet is compared. A value of 0  
    indicates that the selectivity is inactive."  
DEFVAL { 65535 }  
::={dvbRcsPktClassEntry 15}

dvbRcsPktClassVlanUserPri OBJECT-TYPE  
SYNTAX Integer32 (-1..7)  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
    "This object specifies the VLAN User Priority to which a  
    packet is compared. A value of -1 indicates that the  
    selectivity is inactive."

```

    DEFVAL { -1 }
    ::= {dvbRcsPktClassEntry 16}

dvbRcsPktClassPhbAssociation OBJECT-TYPE
    SYNTAX          Unsigned32 (0..65535)
    MAX-ACCESS      read-create
    STATUS          current
    DESCRIPTION
        "Associate the filter entry to a specific PHB (refer to
        dvbRcsPhbIdentifier)."
    ::= {dvbRcsPktClassEntry 17}

dvbRcsPktClassRowStatus OBJECT-TYPE
    SYNTAX          RowStatus
    MAX-ACCESS      read-create
    STATUS          current
    DESCRIPTION
        "The status of this conceptual row. All writable objects
        in this row may be modified at any time."
    ::= {dvbRcsPktClassEntry 18}

=====
-- dvbRcsPhbMappingTable
=====

dvbRcsPhbMappingTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF DvbRcsPhbMappingEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "This table is a list of Per-Hop Behaviour (PHB) MIB
        entries.
        It describes the PHB mapping to the Request Class."
    ::= {dvbRcsRcstQos 2}

dvbRcsPhbMappingEntry OBJECT-TYPE
    SYNTAX          DvbRcsPhbMappingEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "An entry in the PHB mapping table."
    INDEX          {dvbRcsPhbIdentifier}

```



```
::= {dvbRcsPhbMappingTable 1}
```

```
DvbRcsPhbMappingEntry ::= SEQUENCE {  
    dvbRcsPhbIdentifier          Unsigned32,  
    dvbRcsPhbName                SnmpAdminString,  
    dvbRcsPhbRequestClassAssociation Unsigned32,  
    dvbRcsPhbMappingRowStatus    RowStatus  
}
```

**dvbRcsPhbIdentifier OBJECT-TYPE**

SYNTAX Unsigned32 (0..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Identification of the Per-Hop Behaviour (PHB). It follows the unsigned 16 bit binary encoding as specified in [RFC 3140](#). The value 0 designates the Default PHB."

```
::={dvbRcsPhbMappingEntry 1}
```

**dvbRcsPhbName OBJECT-TYPE**

SYNTAX SnmpAdminString

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The name of the Per-Hop Behaviour (PHB)."

```
::={dvbRcsPhbMappingEntry 2}
```

**dvbRcsPhbRequestClassAssociation OBJECT-TYPE**

SYNTAX Unsigned32 (1..16)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object is an association of this Per-Hop Behaviour (PHB) to a Request class (by reference to a Request Class index)."

```
::={dvbRcsPhbMappingEntry 3}
```

**dvbRcsPhbMappingRowStatus OBJECT-TYPE**

SYNTAX RowStatus

MAX-ACCESS read-create

```

        STATUS                current
        DESCRIPTION
            "The status of this conceptual row. All writable
            objects in this row may be modified at any time."
        DEFVAL { active }
 ::= { dvbRcsPhbMappingEntry 4 }

=====
--   dvbRcsRequestClassTable
=====
dvbRcsRequestClassTable OBJECT-TYPE
    SYNTAX                SEQUENCE OF DvbRcsRequestClassEntry
    MAX-ACCESS             not-accessible
    STATUS                 current
    DESCRIPTION
        "This table is a list of Request class entries. This
        class describes the layer 2 QoS objects."
 ::= { dvbRcsRcstQos 3 }

dvbRcsRequestClassEntry OBJECT-TYPE
    SYNTAX                DvbRcsRequestClassEntry
    MAX-ACCESS             not-accessible
    STATUS                 current
    DESCRIPTION
        "An entry in the Request Class table."
    INDEX { dvbRcsRequestClassIndex }
 ::= { dvbRcsRequestClassTable 1 }

DvbRcsRequestClassEntry ::= SEQUENCE {
    dvbRcsRequestClassIndex      Unsigned32,
    dvbRcsRequestClassName      SnmpAdminString,
    dvbRcsRequestClassChanId     Unsigned32,
    dvbRcsRequestClassVccVpi     Unsigned32,
    dvbRcsRequestClassVccVci     Unsigned32,
    dvbRcsRequestClassPidPoolReference Unsigned32,
    dvbRcsRequestClassCra        Unsigned32,
    dvbRcsRequestClassRbdcMax     Unsigned32,
    dvbRcsRequestClassRbdcTimeout Unsigned32,

```

```
        dvbRcsRequestClassVbdcMax      Unsigned32,
        dvbRcsRequestClassVbdcTimeout  Unsigned32,
        dvbRcsRequestClassVbdcMaxBackLog Unsigned32,
        dvbRcsRequestClassRowStatus    RowStatus
    }
```

```
dvbRcsRequestClassIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..16)
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "Index of the Request Class table. A total of 16 entries
        are supported."
    ::= { dvbRcsRequestClassEntry 1 }
```

```
dvbRcsRequestClassName OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "Name of the Request Class."
    ::= { dvbRcsRequestClassEntry 2 }
```

```
dvbRcsRequestClassChanId OBJECT-TYPE
    SYNTAX      Unsigned32 (0..15)
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "Channel id of the Request Class."
    ::= { dvbRcsRequestClassEntry 3 }
```

```
dvbRcsRequestClassVccVpi OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "Defines VPI used for the Request Class (ATM profile)."
    ::= { dvbRcsRequestClassEntry 4 }
```

```
dvbRcsRequestClassVccVci OBJECT-TYPE
    SYNTAX      Unsigned32 (0..65535)
```

```
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "Defines VCI used for the Request Class (ATM profile)."
```

::={dvbRcsRequestClassEntry 5}

dvbRcsRequestClassPidPoolReference OBJECT-TYPE

```
SYNTAX          Unsigned32 (1..16)
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "Reference to the Packet IDentifier (PID) pool
    applicable for the Request Class."
```

::={dvbRcsRequestClassEntry 6}

dvbRcsRequestClassCra OBJECT-TYPE

```
SYNTAX          Unsigned32
UNITS           "bits/s"
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "Define Continuous Rate Assignment (CRA) level for the
    Request Class in bit per second (bits/s)."
```

::={dvbRcsRequestClassEntry 7}

dvbRcsRequestClassRbdcMax OBJECT-TYPE

```
SYNTAX          Unsigned32
UNITS           "x2 kbits/s"
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "Maximum Rate-Based Dynamic Capacity (RBDC) that can be
    requested for the Request Class, in number of 2 kbits/s"
```

::={dvbRcsRequestClassEntry 8}

dvbRcsRequestClassRbdcTimeout OBJECT-TYPE

```
SYNTAX          Unsigned32
UNITS           "superframes"
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
```

"Persistence of the Rate-Based Dynamic Capacity (RBDC)  
request, expressed in superframes"  
::={dvbRcsRequestClassEntry 9}

dvbRcsRequestClassVbdcMax OBJECT-TYPE  
SYNTAX Unsigned32  
UNITS "ATM cells/MPEG packets"  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
"Maximum Volume-Based Dynamic Capacity (VBDC) that can  
be allocated to the Request Class, in payload units (one  
ATM cell or one MPEG packet) per superframe"  
::={dvbRcsRequestClassEntry 10}

dvbRcsRequestClassVbdcTimeout OBJECT-TYPE  
SYNTAX Unsigned32  
UNITS "superframes"  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
"Time after which the RCST considers that the pending  
requests are lost. The RCST may issue new requests for  
that traffic. Volume-Based Dynamic Capacity (VBDC)  
Timeout is expressed in superframes."  
::={dvbRcsRequestClassEntry 11}

dvbRcsRequestClassVbdcMaxBackLog OBJECT-TYPE  
SYNTAX Unsigned32  
UNITS "bytes"  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
"Volume-Based Dynamic Capacity (VBDC) back log per  
Request Class (expressed in bytes)"  
::={dvbRcsRequestClassEntry 12}

dvbRcsRequestClassRowStatus OBJECT-TYPE  
SYNTAX RowStatus  
MAX-ACCESS read-create  
STATUS current

## DESCRIPTION

"The status of this conceptual row. It is not possible to change values in a row of this table while the row is active."

::={dvbRcsRequestClassEntry 13}

```
=====
-- The table of PID pools
=====
```

## dvbRcsPidPoolTable OBJECT-TYPE

SYNTAX SEQUENCE OF DvbRcsPidPoolEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"This table contains the Packet Identifier (PID) pools. For MPEG profile several Request Classes may be mapped within a pool of several PIDs to allow Section Packing across Several Request Classes.

A PID value may occur in more than one PID pool. Each PID value can effectively occur only once in each pool."

::={dvbRcsRcstQos 4}

## dvbRcsPidPoolEntry OBJECT-TYPE

SYNTAX DvbRcsPidPoolEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"An entry in the PID pool table."

INDEX { dvbRcsPidPoolIndex, dvbRcsPidIndex }

::= {dvbRcsPidPoolTable 1}

DvbRcsPidPoolEntry ::= SEQUENCE {

dvbRcsPidPoolIndex	Unsigned32,
dvbRcsPidIndex	Unsigned32,
dvbRcsPidValue	Unsigned32,
dvbRcsPidPoolRowStatus	RowStatus
}	

## dvbRcsPidPoolIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..16)

MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"Index of the PID pool in the PID pool table."  
::={dvbRcsPidPoolEntry 1}

dvbRcsPidIndex OBJECT-TYPE  
SYNTAX Unsigned32 (1..16)  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"Index of the PID entry within the PID pool."  
::={dvbRcsPidPoolEntry 2}

dvbRcsPidValue OBJECT-TYPE  
SYNTAX Unsigned32 (0..8191)  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
"Defines one of the PIDs to be used in a PID pool of  
dvbRcsPidPoolIndex.  
A PID value may occur in more than one PID pool. Each  
PID value can effectively occur only once in each pool."  
::={dvbRcsPidPoolEntry 3}

dvbRcsPidPoolRowStatus OBJECT-TYPE  
SYNTAX RowStatus  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
"The status of this conceptual row. All writable  
objects in this row may be modified at any time."  
DEFVAL { active }  
::={dvbRcsPidPoolEntry 4}

dvbRcsQosGlobalRbdcMax OBJECT-TYPE  
SYNTAX Unsigned32  
UNITS "x2 kbits/s"  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION

"Global maximum RBDC that can be requested for the RCST,  
in number of 2 kbits/s."  
::={dvbRcsRcstQos 5}

dvbRcsQosGlobalVbdcMax OBJECT-TYPE  
SYNTAX Unsigned32  
UNITS "ATM cells/MPEG packets"  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"Global maximum VBDC that can be allocated to the RCST,  
in payload units (one ATM cell or one MPEG packet) per  
superframe."  
::={dvbRcsRcstQos 6}

dvbRcsQosGlobalVbdcMaxBackLog OBJECT-TYPE  
SYNTAX Unsigned32  
UNITS "bytes"  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"Global VBDC back log at RCST level (expressed in  
bytes). It is used only if the VBDC back log is not  
configured in the Request class (expressed in bytes)."  
::={dvbRcsRcstQos 7}

dvbRcsQosChannelIdStrictDispatching OBJECT-TYPE  
SYNTAX INTEGER {  
notStrict (0),  
strict (1)  
}  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"Indicates whether the RCST will strictly follow RC  
association when signaled through Channel\_ID in the  
TBTP:  
(0)- no strict association  
(1)- strict association"  
::={dvbRcsRcstQos 8}



```
--=====
-- dvbRcsRcstControl sub-tree object types
--=====

dvbRcsCtrlRebootCommand OBJECT-TYPE
    SYNTAX          INTEGER {
                        idle          (1),
                        normal        (2),
                        alternate      (3)
                    }
    MAX-ACCESS       read-write
    STATUS           current
    DESCRIPTION
        "This variable shall force the RCST to reboot
        (1)- idle
        (2)- normal reboot (from current software load)
        (3)- reboot from alternate load (swap to alternate
            load before reboot)"
    DEFVAL {idle}
    ::= {dvbRcsRcstControl 1}

dvbRcsCtrlRcstTxDisable OBJECT-TYPE
    SYNTAX          INTEGER {
                        idle          (1),
                        disable       (2)
                    }
    MAX-ACCESS       read-write
    STATUS           current
    DESCRIPTION
        "This variable shall force the RCST to stop transmission
        (transmit disabled as defined in SatLabs System
        Recommendations):
        (1)- idle
        (2)- initiate Tx Disabled"
    DEFVAL {idle}
    ::= {dvbRcsRcstControl 2}

dvbRcsCtrlUserTrafficDisable OBJECT-TYPE
    SYNTAX          INTEGER {
                        idle          (1),
                        disable       (2)
                    }
    MAX-ACCESS       read-write
    STATUS           current
    DESCRIPTION
        "This variable shall force the RCST to stop user traffic
        (transmit disabled as defined in SatLabs System
        Recommendations):
        (1)- idle
        (2)- initiate User Traffic Disabled"
    DEFVAL {idle}
    ::= {dvbRcsRcstControl 3}
```

```
MAX-ACCESS      read-write
STATUS          current
DESCRIPTION
    "This variable shall disable user traffic (only RCST
    management traffic can be transmitted)
    (1)- idle
    (2)- disable user traffic"
DEFVAL {idle}
::={dvbRcsRcstControl 3}

dvbRcsCtrlCwEnable OBJECT-TYPE
    SYNTAX      INTEGER {
                        off      (1),
                        on       (2)
                    }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "This variable will force the RCST to start transmission
        of CW, if the RCST is first set to the installation
        state, and is properly configured for CW transmission:
        (1)- off
        (2)- on"
    DEFVAL {off}
    ::= {dvbRcsRcstControl 4}

dvbRcsCtrlOduTxReferenceEnable OBJECT-TYPE
    SYNTAX      INTEGER {
                        off      (1),
                        on       (2)
                    }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "Enables activation and deactivation of 10 MHz reference
        clock in the Tx IFL cable:
        (1) off
        (2) on"
    DEFVAL {on}
    ::= {dvbRcsRcstControl 5}
```

```
dvbRcsCtrl0duTxDCEnable OBJECT-TYPE
    SYNTAX          INTEGER {
                        off      (1),
                        on       (2)
                    }
    MAX-ACCESS       read-write
    STATUS            current
    DESCRIPTION
        "Enables activation and deactivation of DC in the Tx IFL
        cable:
            (1) off
            (2) on"
    DEFVAL {on}
    ::= {dvbRcsRcstControl 6}
```

```
dvbRcsCtrl0duRxDCEnable OBJECT-TYPE
    SYNTAX          INTEGER {
                        off      (1),
                        on       (2)
                    }
    MAX-ACCESS       read-write
    STATUS            current
    DESCRIPTION
        "Enables activation and deactivation of DC in the Rx IFL
        cable:
            (1) off
            (2) on"
    DEFVAL {on}
    ::= {dvbRcsRcstControl 7}
```

```
dvbRcsCtrlDownloadFileCommand OBJECT-TYPE
    SYNTAX          INTEGER {
                        idle      (1),
                        config    (2),
                        installationLog (3)
                    }
    MAX-ACCESS       read-write
    STATUS            current
    DESCRIPTION
        "This variable will initiate a RCST configuration file
        download process"
```

```
(1) idle
(2) download RCST configuration file from TFTP/FTP
    server
(3) download RCST installation log file from TFTP/FTP
    server (INSTALL_LOG Option)"
DEFVAL {idle}
::={dvbRcsRcstControl 8}

dvbRcsCtrlUploadFileCommand OBJECT-TYPE
    SYNTAX          INTEGER {
                                idle          (1),
                                config        (2),
                                eventAlarm    (3),
                                installationLog (4)
                            }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "This variable will initiate a RCST upload process
        (1) idle
        (2) upload RCST configuration file to TFTP/FTP server
        (3) upload RCST event/alarm log file to TFTP/FTP server
        (4) upload RCST installation log file to TFTP/FTP server
        (INSTALL_LOG Option)"
    DEFVAL {idle}
    ::= {dvbRcsRcstControl 9}

dvbRcsCtrlActivateConfigFileCommand OBJECT-TYPE
    SYNTAX          INTEGER {
                                idle          (1),
                                activate      (2)
                            }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "Triggers the RCST to use the configuration file and
        update its parameters accordingly. Some RCST
        implementations may require a reboot for the parameters
        to take effect (vendor specific).
        (1) Idle
        (2) activate"
```

```
    DEFVAL {idle}
 ::= {dvbRcsRcstControl 10}

dvbRcsCtrlRcstLogonCommand OBJECT-TYPE
    SYNTAX          INTEGER {
                                idle          (1),
                                logon        (2)
                            }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "This variable will initiate a RCST logon
        (1) idle
        (2) initiate RCST logon"
    DEFVAL {idle}
 ::= {dvbRcsRcstControl 11}

dvbRcsCtrlRcstLogoffCommand OBJECT-TYPE
    SYNTAX          INTEGER {
                                idle          (1),
                                logoff       (2)
                            }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "This variable will initiate a RCST logoff
        (1) idle
        (2) initiate RCST logoff"
    DEFVAL {idle}
 ::= {dvbRcsRcstControl 12}

dvbRcsCtrlRcstRxReacquire OBJECT-TYPE
    SYNTAX          INTEGER {
                                idle          (1),
                                reacquireForwardLink (2)
                            }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "This variable will force the RCST to acquire the
        forward link and start receiving."
```

```

    DEFVAL {idle}
    ::= {dvbRcsRcstControl 13}

=====
-- dvbRcsRcstState sub-tree object types
=====
dvbRcsRcstMode OBJECT-TYPE
    SYNTAX          INTEGER {
                        installation (0),
                        operational  (1)
                    }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "Identifies the current mode of the RCST is and allows it
        to return to the installation mode when needed. Values for
        the RCST mode are:
            Installation (0)
            Operational (1)"
    ::= {dvbRcsRcstState 1}

dvbRcsRcstFaultStatus OBJECT-TYPE
    SYNTAX          INTEGER {
                        nofault (0),
                        fault   (1)
                    }
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Provide the fault status of the terminal. The fault
        status management is vendor specific. Values for the
        Fault Status are:
            no fault (0)
            fault (1)"
    ::= {dvbRcsRcstState 2}

dvbRcsRcstFwdLinkStatus OBJECT-TYPE
    SYNTAX          INTEGER {
                        notAcquired (0),
                        acquired    (1)
                    }

```

```
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "Provides the status of the RCST Forward Link. Values
    for the Forward Link Status are:
        Not acquired (0)
        Acquired (1)"
 ::= {dvbRcsRcstState 3}

dvbRcsRcstRtnLinkStatus OBJECT-TYPE
    SYNTAX      INTEGER {
                                loggedOff (0),
                                loggedOn  (1)
                        }
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Provides the status of the RCST Return Link. Values for
        the Return Link Status are:
            Logged-off (0)
            Logged-on (1)"
 ::= {dvbRcsRcstState 4}

dvbRcsRcstLogUpdated OBJECT-TYPE
    SYNTAX      INTEGER {
                                noUpdate      (0),
                                logfileUpdated (1)
                        }
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Indicates the existence of an updated event log file:
            No update (0)
            Event Log file updated (1)
        The RCST should remove the Event Log file updated
        indication as the log file is fetched by the NCC."
 ::= {dvbRcsRcstState 5}

dvbRcsRcstCurrentSoftwareVersion OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS      read-only
```

```

        STATUS             current
        DESCRIPTION
            "Current RCST software version."
 ::= {dvbRcsRcstState 6}

dvbRcsRcstAlternateSoftwareVersion OBJECT-TYPE
    SYNTAX                 SnmpAdminString
    MAX-ACCESS              read-only
    STATUS                  current
    DESCRIPTION
        "Alternate (backup/new) RCST software version."
 ::= {dvbRcsRcstState 7}

dvbRcsRcstActivatedConfigFileVersion OBJECT-TYPE
    SYNTAX                 SnmpAdminString
    MAX-ACCESS              read-only
    STATUS                  current
    DESCRIPTION
        "Version of the most recently activated configuration
        file.
        The version is vendor specific."
 ::= {dvbRcsRcstState 8}

dvbRcsRcstDownloadedConfigFileVersion OBJECT-TYPE
    SYNTAX                 SnmpAdminString
    MAX-ACCESS              read-only
    STATUS                  current
    DESCRIPTION
        "Version of the most recently downloaded configuration
        file.
        Version is vendor specific. If the value is different
        from dvbRcsRcstActivatedConfigFileVersion, it is pending
        for activation."
 ::= {dvbRcsRcstState 9}

=====
-- dvbRcsFwdConfig sub-tree object types
=====

dvbRcsFwdStartTable OBJECT-TYPE
    SYNTAX                 SEQUENCE OF DvbRcsFwdStartEntry
    MAX-ACCESS              not-accessible

```



STATUS current

DESCRIPTION

"Lists Forward Links attachment points (e.g. different for installation and operation).  
The table describes the forward link parameters used for the start-up stream with the NCC."

::={dvbRcsFwdConfig 1}

dvbRcsFwdStartEntry OBJECT-TYPE

SYNTAX DvbRcsFwdStartEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the Forward Link StartConfig table."

INDEX {dvbRcsFwdStartIndex}

::= {dvbRcsFwdStartTable 1}

DvbRcsFwdStartEntry ::= SEQUENCE {

dvbRcsFwdStartIndex	Unsigned32,
dvbRcsFwdStartPopId	Integer32,
dvbRcsFwdStartFrequency	Unsigned32,
dvbRcsFwdStartPolar	INTEGER,
dvbRcsFwdStartFormat	INTEGER,
dvbRcsFwdStartRolloff	INTEGER,
dvbRcsFwdStartSymbolRate	Unsigned32,
dvbRcsFwdStartInnerFec	INTEGER,
dvbRcsFwdStartRowStatus	RowStatus

}

dvbRcsFwdStartIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..8)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Index of the Forward Link StartConfig table."

::={dvbRcsFwdStartEntry 1}

dvbRcsFwdStartPopId OBJECT-TYPE

SYNTAX Integer32 (-1..65535)

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"Population identifier associated with the start-up forward link:

-1: any (auto)

0-65535: specific StartPopId

If 'any' is set, the RCST will assume membership of any announced population ID and will commence with logon in accordance with this assumption."

::={dvbRcsFwdStartEntry 2}

dvbRcsFwdStartFrequency OBJECT-TYPE

SYNTAX Unsigned32

UNITS "x100 kHz"

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"Frequency of the start transponder carrying a Network Information Table to which any RCST shall trigger to acquire forward link. Its value shall be given in multiple of 100 kHz."

::={dvbRcsFwdStartEntry 3}

dvbRcsFwdStartPolar OBJECT-TYPE

SYNTAX INTEGER {  
linearHorizontal (0),  
linearVertical (1),  
circularLeft (2),  
circularRight (3)

}

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"2-bit field giving the polarization of the start transponder carrying an Network Information Table to which any RCST shall trigger to acquire forward link:

00: linear and horizontal

01: linear and vertical

10: circular left

11: circular right"

::={dvbRcsFwdStartEntry 4}

## dvbRcsFwdStartFormat OBJECT-TYPE

```
SYNTAX          INTEGER {
                                auto      (-1),
                                dvbs      (0),
                                dvbs2ccm  (1),
                                dvbs2acm  (2)
                            }
```

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

```
STATUS          current
```

## DESCRIPTION

"Specifies the transmission format standard applied for the startup stream. The start transport stream carries a Network Information Table that the RCST uses for acquiring the forward link signaling. Supported values are:

- 1: unspecified (automatic format acquisition is assumed)
- 0: DVB-S (support of this value is mandatory if DVB-S support is claimed)
- 1: DVB-S2 with CCM (support of this value is mandatory if DVB-S2 CCM support is claimed)
- 2: DVB-S2 with VCM or ACM (support of this value is mandatory if DVB-S2 ACM support is claimed)

This allows the RCST to discriminate between CCM and VCM/ACM when selecting the forward link.

The support of automatic format selection is optional. One or several of the other format selections must be supported, according to the claimed SatLabs profile support."

```
::={dvbRcsFwdStartEntry 5}
```

## dvbRcsFwdStartRolloff OBJECT-TYPE

```
SYNTAX          INTEGER {
                                autoRolloff  (0),
                                rolloff020   (1),
                                rolloff025   (2),
                                rolloff035   (3)
                            }
```

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

```
STATUS          current
```

## DESCRIPTION

"Specifies the receive filter roll-off applied on the start transponder. The start transponder carries a Network Information Table that the RCST uses for acquiring the forward link signaling.

Supported values are:

- 0: any (auto)
- 1: 0.20
- 2: 0.25
- 3: 0.35"

::={dvbRcsFwdStartEntry 6}

dvbRcsFwdStartSymbolRate OBJECT-TYPE

SYNTAX                    Unsigned32  
 UNITS                    "x100 symbols/s"  
 MAX-ACCESS               read-create  
 STATUS                   current

DESCRIPTION

"Specifies the symbol rate on the start transponder carrying a Network Information Table to which any RCST shall trigger to acquire forward link. Its value shall be given in multiple of 100 symbols/s."

::={dvbRcsFwdStartEntry 7}

dvbRcsFwdStartInnerFec OBJECT-TYPE

SYNTAX                    INTEGER        {  
                          autoFec        (-1),  
                          fecRate12      (0),  
                          fecRate23      (1),  
                          fecRate34      (2),  
                          fecRate56      (3),  
                          fecRate78      (4),  
                          fecRate89      (5),  
                          fecRate35      (6),  
                          fecRate45      (7),  
                          fecRate910     (8),  
                          fecRate25      (9),  
                          fecRate13     (10),  
                          fecRate14     (11),  
                          noInnerCode   (12)

}

MAX-ACCESS               read-create

STATUS current

DESCRIPTION

"Specifies the inner Forward Error Correction used on the start transponder carrying a Network Information Table to which any RCST shall trigger to acquire forward link.

Supported values are:

autoFec	(-1),
fecRate1/2	(0),
fecRate2/3	(1),
fecRate3/4	(2),
fecRate5/6	(3),
fecRate7/8	(4),
fecRate8/9	(5),
fecRate3/5	(6),
fecRate4/5	(7),
fecRate9/10	(8),
fecRate2/5	(9),
fecRate1/3	(10),
fecRate1/4	(11),
noInnerCode	(12)

The support of autoFec is optional."

::={dvbRcsFwdStartEntry 8}

dvbRcsFwdStartRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The status of this conceptual row. It is not possible to change values in a row of this table while the row is active."

::={dvbRcsFwdStartEntry 9}

-----  
-- dvbRcsFwdStatus sub-tree object types  
-----

dvbRcsFwdStatusPopId OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"Population identifier applied at log-on:

0-65535: specific StartPopId

If the RCST was allowed to logon with any population, the RCST will report the base number of the announced population ID indicated by the RCS Map Table linkage descriptor used at logon."

::={dvbRcsFwdStatus 1}

## dvbRcsFwdStatusTable OBJECT-TYPE

SYNTAX SEQUENCE OF DvbRcsFwdStatusEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"This table describes the current status of Forward Link interfaces."

::={dvbRcsFwdStatus 2}

## dvbRcsFwdStatusEntry OBJECT-TYPE

SYNTAX DvbRcsFwdStatusEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"An entry in the Forward Link Status table. Each entry is associated with a physical interface.

A RCST shall support at least one entry."

INDEX { dvbRcsFwdStatusIndex }

::= {dvbRcsFwdStatusTable 1}

## DvbRcsFwdStatusEntry ::= SEQUENCE {

dvbRcsFwdStatusIndex Unsigned32,

dvbRcsFwdStatusIfReference Unsigned32,

dvbRcsFwdStatusNetId Unsigned32,

dvbRcsFwdStatusNetName

SnmpAdminString,

dvbRcsFwdStatusFormat INTEGER,

dvbRcsFwdStatusFrequency Unsigned32,

dvbRcsFwdStatusPolar INTEGER,

dvbRcsFwdStatusInnerFec INTEGER,

dvbRcsFwdStatusSymbolRate Unsigned32,

dvbRcsFwdStatusRolloff INTEGER,

```
        dvbRcsFwdStatusModulation    INTEGER,
        dvbRcsFwdStatusFecFrame      INTEGER,
        dvbRcsFwdStatusPilot         INTEGER,
        dvbRcsFwdStatusBer            Integer32,
        dvbRcsFwdStatusCnr            Integer32,
        dvbRcsFwdStatusRxPower        Integer32
    }
```

```
dvbRcsFwdStatusIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..8)
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "Index of the Forward Link Status table."
    ::= {dvbRcsFwdStatusEntry 1}
```

```
dvbRcsFwdStatusIfReference OBJECT-TYPE
    SYNTAX      Unsigned32 (1..8)
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Cross reference to the interface table"
    ::= {dvbRcsFwdStatusEntry 2}
```

```
dvbRcsFwdStatusNetId OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Interactive network identifier of the forward
        link (from RCS Map Table)"
    ::= {dvbRcsFwdStatusEntry 3}
```

```
dvbRcsFwdStatusNetName OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "The name of the interactive network of the forward
        link (from RCS Map Table)"
    ::= {dvbRcsFwdStatusEntry 4}
```

```
dvbRcsFwdStatusFormat OBJECT-TYPE
    SYNTAX          INTEGER {
                        dvbs          (0),
                        dvbs2ccm      (1),
                        dvbs2acm      (2),
                        reservedFormat (3)
                      }
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Specifies the transmission format applied on the
        forward link. Supported values are (from RMT):
        0: DVB-S
        1: DVB-S2 using CCM
        2: DVB-S2 using VCM or ACM
        3: reserved"
    ::= { dvbRcsFwdStatusEntry 5 }

dvbRcsFwdStatusFrequency OBJECT-TYPE
    SYNTAX          Unsigned32
    UNITS           "x100 kHz"
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "An estimate of the frequency of the forward link. Its
        value shall be given in multiple of 100 kHz."
    ::= { dvbRcsFwdStatusEntry 6 }

dvbRcsFwdStatusPolar OBJECT-TYPE
    SYNTAX          INTEGER {
                        linearHorizontal (0),
                        linearVertical   (1),
                        circularLeft     (2),
                        circularRight    (3)
                      }
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "2-bit field giving the polarization of the forward link
        (from RMT):"
```



```

    00: linear and horizontal
    01: linear and vertical
    10: circular left
    11: circular right"
 ::= {dvbRcsFwdStatusEntry 7}

```

# dvbRcsFwdStatusInnerFec OBJECT-TYPE

```

SYNTAX          INTEGER {
    unknown      (-1),
    fecRate12    (0),
    fecRate23    (1),
    fecRate34    (2),
    fecRate56    (3),
    fecRate78    (4),
    fecRate89    (5),
    fecRate35    (6),
    fecRate45    (7),
    fecRate910   (8),
    fecRate25    (9),
    fecRate13    (10),
    fecRate14    (11),
    noInnerCode  (12)
}

```

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"Specifies the inner Forward Error Correction used on the forward link for transmission to the RCST.

Supported values are:

```

    unknown      (-1),
    fecRate1/2    (0),
    fecRate2/3    (1),
    fecRate3/4    (2),
    fecRate5/6    (3),
    fecRate7/8    (4),
    fecRate8/9    (5),
    fecRate3/5    (6),
    fecRate4/5    (7),
    fecRate9/10   (8),
    fecRate2/5    (9),
    fecRate1/3    (10),

```

```

        fecRate1/4      (11),
        noInnerCode     (12)

```

The RCST will report a value that has been used for transmission to the RCST within the most recent 60 seconds. If this is not relevant, the RCST will report 'unknown'."

```
 ::= {dvbRcsFwdStatusEntry 8}
```

dvbRcsFwdStatusSymbolRate OBJECT-TYPE

```

SYNTAX      Unsigned32
UNITS       "x100 symbols/s"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION

```

"An estimate of the symbol rate of the forward link.

Its value shall be given in multiple of 100 symbol/s."

```
 ::= {dvbRcsFwdStatusEntry 9}
```

dvbRcsFwdStatusRolloff OBJECT-TYPE

```

SYNTAX      INTEGER {
                                undefRolloff      (0),
                                rolloff020        (1),
                                rolloff025        (2),
                                rolloff035        (3)
                        }

```

```

MAX-ACCESS  read-only
STATUS      current

```

DESCRIPTION

"An estimate of the roll-off applied on the forward link.

Supported values are:

0: undefined

1: 0.20

2: 0.25

3: 0.35"

```
 ::= {dvbRcsFwdStatusEntry 10}
```

dvbRcsFwdStatusModulation OBJECT-TYPE

```

SYNTAX      INTEGER {
                                unknown           (0),
                                mBPSK            (1),

```

```

        mQPSK          (2),
        m8PSK          (3),
        m16APSK        (4),
        m32APSK        (5)
    }
    MAX-ACCESS          read-only
    STATUS              current
    DESCRIPTION
        "Indicates the modulation on the forward link used for
        transmission to the RCST.
        0: unknown
        1: BPSK
        2: QPSK
        3: 8PSK
        4: 16APSK
        5: 32APSK
        The RCST will report a value that has been used for
        transmission to the RCST within the most recent 60
        seconds.
        If this is not relevant, the RCST will report
        'unknown'."
 ::= {dvbRcsFwdStatusEntry 11}

dvbRcsFwdStatusFecFrame OBJECT-TYPE
    SYNTAX              INTEGER {
                            unknown          (0),
                            shortframe      (1),
                            longframe       (2)
                        }
    MAX-ACCESS          read-only
    STATUS              current
    DESCRIPTION
        "Indicates the frame length used on the forward link for
        transmission to the RCST.
        Supported values are:
        0: Unknown
        1: Short frame
        2: Normal frame
        The RCST will report a value that has been used for
        transmission to the RCST within the most recent 60
        seconds."

```

If this is not relevant, the RCST will report  
'unknown'."

::={dvbRcsFwdStatusEntry 12}

dvbRcsFwdStatusPilot OBJECT-TYPE

SYNTAX INTEGER {

unknown (0),

pilotNotused (1),

pilotUsed (2)

}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Indicates whether pilots are used on the forward link  
for transmission to the RCST.  
Supported values are:

0: Unknown

1: Pilots are not used

2: Pilots are used

The RCST will report a value that has been used for  
transmission to the RCST within the most recent 60  
seconds.  
If this is not relevant, the RCST will report  
'unknown'."

::={dvbRcsFwdStatusEntry 13}

dvbRcsFwdStatusBer OBJECT-TYPE

SYNTAX Integer32

UNITS "exponent of 10"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Provides the RCST BER on the Forward Link in log10  
units."

::={dvbRcsFwdStatusEntry 14}

dvbRcsFwdStatusCnr OBJECT-TYPE

SYNTAX Integer32

UNITS "0.1 dB"

MAX-ACCESS read-only

STATUS current

```
DESCRIPTION
    "Provides the RCST CNR on the Forward Link in 0.1 dB
    units."
 ::= {dvbRcsFwdStatusEntry 15}

dvbRcsFwdStatusRxPower OBJECT-TYPE
    SYNTAX          Integer32
    UNITS            "0.1 dBm"
    MAX-ACCESS       read-only
    STATUS           current
    DESCRIPTION
        "Provides the power level of the Forward Link as
        received at the IDU, in 0.1 dBm units."
    DEFVAL { -500 }
 ::= {dvbRcsFwdStatusEntry 16}

=====
-- dvbRcsRtnConfig sub-tree object types
=====

dvbRcsRtnConfigMaxEirp OBJECT-TYPE
    SYNTAX          Integer32
    UNITS            "x0.1 dBm"
    MAX-ACCESS       read-write
    STATUS           current
    DESCRIPTION
        "Max EIRP of the RCST given in resolution of 0.1 dBm,
        applied when the IDU can itself set the necessary IDU
        TX output level e.g. when using a BUC that has a power
        level detector and provides sufficient feedback to the
        IDU."
 ::= {dvbRcsRtnConfig 1}

dvbRcsRtnConfigDefIfLevel OBJECT-TYPE
    SYNTAX          Integer32
    UNITS            "x0.1 dBm"
    MAX-ACCESS       read-write
    STATUS           current
    DESCRIPTION
        "IDU TX output level applied in case the
        dvbRcsRtnConfigMaxEirp cannot be used. The resolution
        is 0.1 dBm and the accuracy is +/- 1 dBm."
```

```

 ::= {dvbRcsRtnConfig 2}

=====
--   dvbRcsRtnStatus sub-tree object types
=====
dvbRcsRtnStatusEbN0 OBJECT-TYPE
    SYNTAX          Integer32
    UNITS            "x0.1 dB"
    MAX-ACCESS       read-only
    STATUS           current
    DESCRIPTION
        "The EbN0 value reported for the return link, referenced
        to the regular SYNC burst transmission, in 0.1 dB
        units."
 ::= {dvbRcsRtnStatus 1}

dvbRcsRtnStatusSFDuration OBJECT-TYPE
    SYNTAX          Unsigned32 (250..7500)
    UNITS            "0.1 ms"
    MAX-ACCESS       read-only
    STATUS           current
    DESCRIPTION
        "The duration of the currently applied return link
        super-frame structure, in tenths of milliseconds."
 ::= {dvbRcsRtnStatus 2}

dvbRcsRtnStatusPayloadUnit OBJECT-TYPE
    SYNTAX          INTEGER  {
                                unitATM      (0),
                                unitMPEG     (1)
                            }
    MAX-ACCESS       read-only
    STATUS           current
    DESCRIPTION
        "Indicates if the payload unit used for the return link
        is ATM or MPEG."
 ::= {dvbRcsRtnStatus 3}

=====
--   conformance information
=====

```

```
dvbRcsRcstGroups          OBJECT IDENTIFIER ::=
{dvbRcsConformance 1}
dvbRcsRcstCompliances      OBJECT IDENTIFIER ::=
{dvbRcsConformance 2}

--=====
--      conformance statements
--=====
dvbRcsRcstCompliance1 MODULE-COMPLIANCE
    STATUS          current
    DESCRIPTION
        "The compliance statement for DVB-RCS terminals that
        are compliant with SatLabs System Recommendations.
        Compliance is linked to the support by the terminal of
        the options or features defined in the SatLabs System
        Recommendations.
        The supported options and features of a terminal are
        declared in objects
        dvbRcsSystemSatLabsOptionsDeclaration
        and dvbRcsSystemSatLabsFeaturesDeclaration
        respectively."

    MODULE -- this module

        MANDATORY-GROUPS {dvbRcsRcstSystemGroup,
dvbRcsRcstNetworkGroup, dvbRcsRcstInstallGroup,
dvbRcsRcstQosGroup, dvbRcsRcstControlGroup,
dvbRcsRcstStateGroup, dvbRcsFwdConfigGroup,
dvbRcsFwdStatusGroup, dvbRcsRtnConfigGroup,
dvbRcsRtnStatusGroup}

    GROUP dvbRcsRcstExtNetworkGroup
    DESCRIPTION
        "This group is mandatory for an RCST that supports extended
        networking management functionality. Such RCST is qualified
        as supporting the EXTNETWORK feature, as defined in the
        SatLabs System Recommendations."

    GROUP dvbRcsRcstDnsGroup
    DESCRIPTION
        "This group is mandatory for an RCST that supports the DNS
```

protocol. Such RCST is qualified as supporting the DNS option, as defined in the SatLabs System Recommendations."

GROUP dvbRcsRcstExtInstallGroup

DESCRIPTION

"This group is mandatory for an RCST that supports the installation log file. Such RCST is qualified as supporting the INSTALL\_LOG feature, as defined in the SatLabs System Recommendations."

GROUP dvbRcsRcstEnhancedClassifierGroup

DESCRIPTION

"This group is mandatory for an RCST that supports the enhanced classifier feature. Such RCST is qualified as supporting the ENHCLASSIFIER feature, as defined in the SatLabs System Recommendations."

GROUP dvbRcsRcstMpegQosGroup

DESCRIPTION

"This group is mandatory for an RCST that supports MPEG traffic bursts. Such RCST is qualified as supporting the MPEG\_TRF option, as defined in the SatLabs System Recommendations."

GROUP dvbRcsRcstGlobalQosGroup

DESCRIPTION

"This group is mandatory for an RCST that supports global RCST QOS configuration data. Such RCST is qualified as supporting the RCST\_PARA feature, as defined in the SatLabs System Recommendations."

GROUP dvbRcsRcstStrictQosGroup

DESCRIPTION

"This group is mandatory for an RCST that supports strict channel ID dispatching. Such RCST is qualified as supporting the CHID\_STRICT option, as defined in the SatLabs System Recommendations."

GROUP dvbRcsRcstExtControlGroup

DESCRIPTION



"This group is mandatory for an RCST that supports extended control management functionality. Such RCST is qualified as supporting the EXTCONTROL feature, as defined in the SatLabs System Recommendations."

GROUP dvbRcsRtnExtConfigGroup

DESCRIPTION

"This group is mandatory for an RCST that supports extended return link configuration management functionality. Such RCST is qualified as supporting the EXTCONFIG feature, as defined in the SatLabs System Recommendations."

GROUP dvbRcsRtnExtStatusGroup

DESCRIPTION

"This group is mandatory for an RCST that supports extended return link status report functionality. Such RCST is qualified as supporting the EXTSTATUS feature, as defined in the SatLabs System Recommendations."

GROUP dvbRcsRcstOduListGroup

DESCRIPTION

"This group is mandatory for an RCST that supports the ODU structural entities defined under dvbRcsOduTx, dvbRcsOduRx and dvbRcsOduAntenna. Such RCST is qualified as supporting the ODULIST feature, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsSystemOduAntennaSize

MIN-ACCESS read-only

DESCRIPTION

"Write access must be supported if dvbRcsRcstOduListGroup is not supported."

OBJECT dvbRcsSystemOduAntennaGain

MIN-ACCESS read-only

DESCRIPTION

"Write access must be supported if dvbRcsRcstOduListGroup is not supported."

OBJECT dvbRcsSystemOduSspa

MIN-ACCESS read-only

## DESCRIPTION

"Write access must be supported if dvbRcsRcstOduListGroup is not supported."

OBJECT dvbRcsSystemOduTxType

MIN-ACCESS read-only

## DESCRIPTION

"Write access must be supported if dvbRcsRcstOduListGroup is not supported."

OBJECT dvbRcsSystemOduRxType

MIN-ACCESS read-only

## DESCRIPTION

"Write access must be supported if dvbRcsRcstOduListGroup is not supported."

OBJECT dvbRcsSystemOduRxBand

MIN-ACCESS read-only

## DESCRIPTION

"Write access must be supported if dvbRcsRcstOduListGroup is not supported."

OBJECT dvbRcsSystemOduRxLO

MIN-ACCESS read-only

## DESCRIPTION

"Write access must be supported if dvbRcsRcstOduListGroup is not supported."

OBJECT dvbRcsSystemOduTxLO

MIN-ACCESS read-only

## DESCRIPTION

"Write access must be supported if dvbRcsRcstOduListGroup is not supported."

OBJECT dvbRcsNetworkOamInetAddressType

SYNTAX InetAddressType { ipv4(1) }

## DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsNetworkOamInetAddress

SYNTAX InetAddress (SIZE(4))

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsNetworkLanInetAddressType

SYNTAX InetAddressType { ipv4(1) }

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsNetworkLanInetAddress

SYNTAX InetAddress (SIZE(4))

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsNetworkAirInterfaceDefaultGatewayInetAddressType

SYNTAX InetAddressType { ipv4(1) }

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsNetworkAirInterfaceDefaultGatewayInetAddress

SYNTAX InetAddress (SIZE(4))

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsPrimaryDnsServerInetAddressType

SYNTAX InetAddressType { ipv4(1) }

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsPrimaryDnsServerInetAddress

SYNTAX InetAddress (SIZE(4))

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsSecondaryDnsServerInetAddressType

SYNTAX InetAddressType { ipv4(1) }

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsSecondaryDnsServerInetAddress

SYNTAX InetAddress (SIZE(4))

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsNetworkNccMgtInetAddressType

SYNTAX InetAddressType { ipv4(1) }

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsNetworkNccMgtInetAddress

SYNTAX InetAddress (SIZE(4))

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsPktClassDscpLow

MIN-ACCESS read-only

DESCRIPTION

"Create access only required if the RCST supports the enhanced classifier feature. Such RCST is qualified as supporting the ENHCLASSIFIER feature, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsPktClassDscpHigh

MIN-ACCESS read-only

DESCRIPTION

"Create access only required if the RCST supports the enhanced classifier feature. Such RCST is qualified as supporting the ENHCLASSIFIER feature, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsPktClassDscpMarkValue

MIN-ACCESS read-only

DESCRIPTION

"Create access only required if the RCST supports the enhanced classifier feature. Such RCST is qualified as supporting the ENHCLASSIFIER feature, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsPktClassSrcInetAddressType

SYNTAX InetAddressType { ipv4(1) }

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsPktClassSrcInetAddress

SYNTAX InetAddress (SIZE(4))

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsPktClassDstInetAddressType

SYNTAX InetAddressType { ipv4(1) }

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsPktClassDstInetAddress

SYNTAX InetAddress (SIZE(4))

DESCRIPTION

"An implementation is only required to support IPv4 addresses."

OBJECT dvbRcsPhbName

MIN-ACCESS read-only

DESCRIPTION

"Create access only required if the RCST supports extended management support. Such RCST is qualified as supporting the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsPhbRequestClassAssociation

MIN-ACCESS read-only

## DESCRIPTION

"Create access only required if the RCST supports extended management support. Such RCST is qualified as supporting the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsPhbMappingRowStatus

MIN-ACCESS read-only

## DESCRIPTION

"Create access only required if the RCST supports extended management support. Such RCST is qualified as supporting the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassName

MIN-ACCESS read-only

## DESCRIPTION

"Write access only required if the RCST supports extended management support. Such RCST is qualified as supporting the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassChanId

MIN-ACCESS read-only

## DESCRIPTION

"Write access only required if the RCST supports extended management support. Such RCST is qualified as supporting the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassVccVpi

MIN-ACCESS read-only

## DESCRIPTION

"Write access only required if the RCST supports extended management support. Such RCST is qualified as supporting the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassVccVci

MIN-ACCESS read-only

## DESCRIPTION

"Write access only required if the RCST supports extended management support. Such RCST is qualified as supporting the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassPidPoolReference

MIN-ACCESS not-accessible

DESCRIPTION

"Read-only access required if the RCST supports MPEG traffic Bursts, according to the MPEG\_TRF option, as defined in the SatLabs System Recommendations. Write access only required if the RCST also supports extended management support, according to the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassCra

MIN-ACCESS read-only

DESCRIPTION

"Write access only required if the RCST supports extended management support, according to the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassRbdcMax

MIN-ACCESS read-only

DESCRIPTION

"Write access only required if the RCST supports extended management support, according to the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassRbdcTimeout

MIN-ACCESS read-only

DESCRIPTION

"Write access only required if the RCST supports extended management support, according to the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassVbdcMax

MIN-ACCESS read-only

DESCRIPTION

"Write access only required if the RCST supports extended

management support, according to the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassVbdcTimeout

MIN-ACCESS read-only

DESCRIPTION

"Write access only required if the RCST supports extended management support, according to the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassVbdcMaxBackLog

MIN-ACCESS read-only

DESCRIPTION

"Write access only required if the RCST supports extended management support, according to the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsRequestClassRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access only required if the RCST supports extended management support, according to the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsPidValue

MIN-ACCESS not-accessible

DESCRIPTION

"Read-only access required if the RCST supports MPEG traffic Bursts, according to the MPEG\_TRF option, as defined in the SatLabs System Recommendations. Write access only required if the RCST also supports extended management support, according to the SNMPMISC option, as defined in the SatLabs System Recommendations."

OBJECT dvbRcsPidPoolRowStatus

MIN-ACCESS not-accessible

DESCRIPTION

"Read-only access required the RCST supports MPEG traffic Bursts, according to the MPEG\_TRF option, as defined in the SatLabs System Recommendations. Write access only required if the RCST also supports extended management support,



according to the SNMPMISC option, as defined in the SatLabs  
System Recommendations."

::= {dvbRcsRcstCompliances 1}

-----  
-- units of conformance  
-----

-----  
-- object groups for RCST system  
-----

dvbRcsRcstSystemGroup OBJECT-GROUP

OBJECTS {

dvbRcsSystemMibRevision,  
dvbRcsSystemSatLabsProfilesDeclaration,  
dvbRcsSystemSatLabsOptionsDeclaration,  
dvbRcsSystemSatLabsFeaturesDeclaration,  
dvbRcsSystemLocation,  
dvbRcsSystemOduAntennaSize,  
dvbRcsSystemOduAntennaGain,  
dvbRcsSystemOduSspa,  
dvbRcsSystemOduTxType,  
dvbRcsSystemOduRxType,  
dvbRcsSystemOduRxBand,  
dvbRcsSystemOduRxLO,  
dvbRcsSystemOduTxLO,  
dvbRcsTcpPep,  
dvbRcsHttpPep  
}

STATUS current

DESCRIPTION

"A collection of objects providing information  
applicable for basic device management support."

::= {dvbRcsRcstGroups 1}

-----  
-- object groups for RCST networking  
-----

## dvbRcsRcstNetworkGroup OBJECT-GROUP

```
OBJECTS {
    dvbRcsNetworkOamInetAddressType,
    dvbRcsNetworkOamInetAddress,
    dvbRcsNetworkOamInetAddressPrefixLength,
    dvbRcsNetworkLanInetAddressType,
    dvbRcsNetworkLanInetAddress,
    dvbRcsNetworkLanInetAddressPrefixLength,
    dvbRcsNetworkConfigFileDownloadUrl,
    dvbRcsNetworkConfigFileUploadUrl,
    dvbRcsNetworkLogFileUploadUrl
}
```

STATUS current

## DESCRIPTION

"A collection of objects providing basic networking management support."

::= {dvbRcsRcstGroups 2}

## dvbRcsRcstExtNetworkGroup OBJECT-GROUP

```
OBJECTS {
    dvbRcsNetworkOamInetAddressAssign,
    dvbRcsNetworkAirInterfaceDefaultGatewayInetAddressType,
    dvbRcsNetworkAirInterfaceDefaultGatewayInetAddress,
    dvbRcsNetworkAirInterfaceDefaultGatewayInetAddressPrefixLength,
    dvbRcsNetworkNccMgtInetAddressType,
    dvbRcsNetworkNccMgtInetAddress,
    dvbRcsNetworkNccMgtInetAddressPrefixLength
}
```

STATUS current

## DESCRIPTION

"A collection of objects providing extended networking management support."

::= {dvbRcsRcstGroups 3}

## dvbRcsRcstDnsGroup OBJECT-GROUP

```
OBJECTS {
    dvbRcsPrimaryDnsServerInetAddressType,
    dvbRcsPrimaryDnsServerInetAddress,
    dvbRcsPrimaryDnsServerInetAddressPrefixLength,
    dvbRcsSecondaryDnsServerInetAddressType,
    dvbRcsSecondaryDnsServerInetAddress,
}
```

```
        dvbRcsSecondaryDnsServerInetAddressPrefixLength
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing DNS management
        support."
    ::= {dvbRcsRcstGroups 4}

--=====
--      object groups for RCST installation
--=====

dvbRcsRcstInstallGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsInstallAntennaAlignmentState,
        dvbRcsInstallCwFrequency,
        dvbRcsInstallCwMaxDuration,
        dvbRcsInstallCwPower,
        dvbRcsInstallCoPolReading,
        dvbRcsInstallXPOLReading,
        dvbRcsInstallCoPolTarget,
        dvbRcsInstallXPOLTarget,
        dvbRcsInstallStandByDuration,
        dvbRcsInstallTargetEsN0
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing information
        applicable for basic installation support."
    ::= {dvbRcsRcstGroups 5}

dvbRcsRcstExtInstallGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsNetworkInstallLogFileDownloadUrl,
        dvbRcsNetworkInstallLogFileUploadUrl
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing extended device
        installation support."
    ::= {dvbRcsRcstGroups 6}
```

```
--=====
--      object groups for QOS
--=====

dvbRcsRcstQosGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsPktClassDscpLow,
        dvbRcsPktClassDscpHigh,
        dvbRcsPktClassDscpMarkValue,
        dvbRcsPktClassPhbAssociation,
        dvbRcsPktClassRowStatus,
        dvbRcsPhbName,
        dvbRcsPhbRequestClassAssociation,
        dvbRcsPhbMappingRowStatus,
        dvbRcsRequestClassName,
        dvbRcsRequestClassChanId,
        dvbRcsRequestClassVccVpi,
        dvbRcsRequestClassVccVci,
        dvbRcsRequestClassCra,
        dvbRcsRequestClassRbdcMax,
        dvbRcsRequestClassRbdcTimeout,
        dvbRcsRequestClassVbdcMax,
        dvbRcsRequestClassVbdcTimeout,
        dvbRcsRequestClassVbdcMaxBackLog,
        dvbRcsRequestClassRowStatus
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing basic access to QOS
        configuration data."
    ::= { dvbRcsRcstGroups 7}

dvbRcsRcstEnhancedClassifierGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsPktClassIpProtocol,
        dvbRcsPktClassSrcInetAddressType,
        dvbRcsPktClassSrcInetAddress,
        dvbRcsPktClassSrcInetAddressPrefixLength,
        dvbRcsPktClassDstInetAddressType,
        dvbRcsPktClassDstInetAddress,
```

```
        dvbRcsPktClassDstInetAddressPrefixLength,
        dvbRcsPktClassSrcPortLow,
        dvbRcsPktClassSrcPortHigh,
        dvbRcsPktClassDstPortLow,
        dvbRcsPktClassDstPortHigh,
        dvbRcsPktClassVlanUserPri
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing support for
        management of the enhanced classifier."
    ::= {dvbRcsRcstGroups 8}

dvbRcsRcstMpegQosGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsRequestClassPidPoolReference,
        dvbRcsPidValue,
        dvbRcsPidPoolRowStatus
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing access to MPEG
        related link QOS configuration data."
    ::= {dvbRcsRcstGroups 9}

dvbRcsRcstGlobalQosGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsQosGlobalRbdcMax,
        dvbRcsQosGlobalVbdcMax,
        dvbRcsQosGlobalVbdcMaxBackLog
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing access to global RCST
        QOS configuration data."
    ::= {dvbRcsRcstGroups 10}

dvbRcsRcstStrictQosGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsQosChannelIdStrictDispatching
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing access to strict RCST
        QOS configuration data."
    ::= {dvbRcsRcstGroups 11}
```

```

    STATUS      current
    DESCRIPTION
        "A collection of objects allowing management of strict
        channel ID dispatching."
    ::= {dvbRcsRcstGroups 11}

=====
--      object groups for RCST control
=====

dvbRcsRcstControlGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsCtrlRebootCommand,
        dvbRcsCtrlUserTrafficDisable,
        dvbRcsCtrlCwEnable,
        dvbRcsCtrlDownloadFileCommand,
        dvbRcsCtrlUploadFileCommand,
        dvbRcsCtrlActivateConfigFileCommand,
        dvbRcsCtrlRcstRxReacquire
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects allowing basic RCST control."
    ::= {dvbRcsRcstGroups 12}

dvbRcsRcstExtControlGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsCtrlRcstTxDisable,
        dvbRcsCtrl0duTxReferenceEnable,
        dvbRcsCtrl0duTxDCEnable,
        dvbRcsCtrl0duRxDCEnable,
        dvbRcsCtrlRcstLogonCommand,
        dvbRcsCtrlRcstLogoffCommand
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects allowing extended RCST
        control."
    ::= {dvbRcsRcstGroups 13}

=====
--      object groups for RCST state
=====
```

```
--=====

dvbRcsRcstStateGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsRcstMode,
        dvbRcsRcstFaultStatus,
        dvbRcsRcstFwdLinkStatus,
        dvbRcsRcstLogUpdated,
        dvbRcsRcstCurrentSoftwareVersion,
        dvbRcsRcstAlternateSoftwareVersion,
        dvbRcsRcstActivatedConfigFileVersion,
        dvbRcsRcstDownloadedConfigFileVersion
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects allowing access to RCST state."
 ::= {dvbRcsRcstGroups 14}

--=====
--      object groups for forward link
--=====

dvbRcsFwdConfigGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsFwdStartPopId,
        dvbRcsFwdStartFrequency,
        dvbRcsFwdStartPolar,
        dvbRcsFwdStartFormat,
        dvbRcsFwdStartRolloff,
        dvbRcsFwdStartSymbolRate,
        dvbRcsFwdStartInnerFec,
        dvbRcsFwdStartRowStatus
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing basic start forward
         link configuration support."
 ::= {dvbRcsRcstGroups 15}

dvbRcsFwdStatusGroup OBJECT-GROUP
    OBJECTS {
```

```
        dvbRcsFwdStatusPopId,
        dvbRcsFwdStatusIfReference,
        dvbRcsFwdStatusNetId,
        dvbRcsFwdStatusNetName,
        dvbRcsFwdStatusFormat,
        dvbRcsFwdStatusFrequency,
        dvbRcsFwdStatusPolar,
        dvbRcsFwdStatusInnerFec,
        dvbRcsFwdStatusSymbolRate,
        dvbRcsFwdStatusRolloff,
        dvbRcsFwdStatusModulation,
        dvbRcsFwdStatusFecFrame,
        dvbRcsFwdStatusPilot,
        dvbRcsFwdStatusBer,
        dvbRcsFwdStatusCnr,
        dvbRcsFwdStatusRxPower
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing forward link status."
    ::= {dvbRcsRcstGroups 16}

--=====
--      object groups for return link
--=====

dvbRcsRtnConfigGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsRtnConfigDefIfLevel
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing basic return link
        configuration support."
    ::= {dvbRcsRcstGroups 17}

dvbRcsRtnExtConfigGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsRtnConfigMaxEirp
    }
    STATUS      current
```



```
DESCRIPTION
    "A collection of objects providing extended return link
    configuration support."
 ::= {dvbRcsRcstGroups 18}

dvbRcsRtnStatusGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsRtnStatusPayloadUnit
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects allowing access to return link
        status."
 ::= {dvbRcsRcstGroups 19}

dvbRcsRtnExtStatusGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsRcstRtnLinkStatus,
        dvbRcsRtnStatusEbN0,
        dvbRcsRtnStatusSFDuration
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects allowing access to extended
        return link status."
 ::= {dvbRcsRcstGroups 20}

dvbRcsRcstOduListGroup OBJECT-GROUP
    OBJECTS {
        dvbRcsOduTxTypeDescription,
        dvbRcsOduTxType,
        dvbRcsOduRxTypeDescription,
        dvbRcsOduRxType,
        dvbRcsOduAntennaTypeDescription,
        dvbRcsOduAntennaType
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects supporting flexible
        selection of ODU devices."
 ::= {dvbRcsRcstGroups 21}
```

END

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## **5. Security Considerations**

This MIB module relates to a system that allows end-users to access a private network or public internet access. As such, improper manipulation of the MIB objects represented by this MIB

module may result in denial of service to a large number of end-users.

There are a number of management objects defined in this MIB module with a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations. These are the tables and objects and their sensitivity/vulnerability:

- o The use of the `dvbRcsNetworkNccMgtInetAddress` object to specify management stations is considered only limited protection and does not protect against attacks that spoof the management station's IP address. The use of stronger mechanisms, such as SNMPv3 security, should be considered, where possible.
- o The `dvbRcsSystemOdu` objects, `dvbRcsCtrlCwEnable`, `dvbRcsRtnConfigMaxEirp`, `dvbRcsRtnConfigDefIfLevel` objects and `dvbRcsRcstInstall` sub-tree can, if improperly or maliciously used, lead to unwanted emissions or emission levels on the satellite uplink, thereby resulting in potential degradation of the RCS service or other services using the frequency band being used.
- o The RCST may have its configuration file changed by the actions of the management system using a combination of the following objects: `dvbRcsNetworkInstallLogFileDownloadUrl`, `dvbRcsCtrlDownloadFileCommand`, `dvbRcsCtrlActivateConfigFileCommand` or `dvbRcsCtrlRebootCommand`. An improper configuration file download may result in substantial vulnerabilities and the loss of the ability of the management system to control the satellite terminal.
- o Setting `dvbRcsNetworkLogFileUploadUrl` to a wrong address may potentially impact debugging/troubleshooting efforts.
- o Setting objects in `dvbRcsPktClassTable` could cause significant changes to default traffic filtering on a RCST.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET access to these objects and possibly to even encrypt the values of these objects when



sending them over the network via SNMP. These are the tables and objects and their sensitivity/vulnerability:

- o The `dvbRcsNetworkNccMgtInetAddress` object may provide sufficient information for attackers to spoof management stations that have management access to the device.
- o The `dvbRcsRcstCurrentSoftwareVersion` object may provide hints as to the software vulnerabilities of the cable device.
- o The object `dvbRcsNetworkOamInetAddress` and the table `dvbRcsPktClassTable` may provide clues for attacking the cable device and other subscriber devices.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB module.

It is RECOMMENDED that implementers consider the security features provided by the SNMPv3 framework (see [\[RFC3410\]](#), [section 8](#)), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module, is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

## **6. IANA Considerations**

This document includes no request to IANA. The transmission and ifType numbers described in [Section 3](#) have already been assigned under the smi-numbers registry.



## **7. Acknowledgments**

The authors thank Gorry Fairhurst for advice in the preparation of this document.

The authors recognize this document is a collective effort of the SatLabs Group ([www.satlabs.org](http://www.satlabs.org)), in particular the many corrections and suggestions brought by Juan Luis Manas.

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<<< RFC Ed Note: please remove the text below, prior to publications >>>

Change Log.

Rev -00

\* First draft, for comment by the community.

Rev -01

\* Second draft, for comment by the community.

The MIB module is renamed DVBRCS-MIB to reflect that it covers more than solely interface issues.

The MIB has been updated with

- \* a conformance section that captures the options
- \* structural changes and corrections to achieve this
- \* SYNTAX refinements where applicable
- \* UNITS declarations where applicable

Document reformatted to conform to I-D format conventions.

Rev -02

\* Third draft, for comment by the community.

Update following comments received from the ipdvb list (Gorry Fairhurst).

Rev -03

\* Fourth draft, for comment by the community.

Update following comments received from Martin Stiernerling and complement/corrections from the SatLabs Group.

Rev -04

\* Fifth draft



Corrected read-write into read-create MAXACCESS for objects in requestClassTable and pidPoolTable.

Minor updates to correct format of tables and some MIB comments.

Rev -05

\* Sixth draft

Addition of dvbRcs prefix to all descriptors, following request from MIB doctor (according to [Appendix C of RFC 4181](#)).

Clarification and complements brought to ODU configuration objects (see [section 3.4.1](#)), ODU structural entities definition in dvbRcsRcstSystem group and conformance section.

Modification of the interface types usage ([section 3.3](#)) in order to have alignment with Ethernet interface (dvbRcsMacLayer should count link layer packets and bytes, like Ethernet does, and not IP).

Updated copyright to reflect current IETF Trust guidelines and advice from Dan Romascanu.

Rev -06

\* Seventh draft

Updated following MIB doctor review. Adjustments based on the MIB authoring guidelines from the IETF:

- o I-D renamed
- o Used name instead of number for DEFVAL where appropriate
- o Clarification added in the MIB module description regarding persistency behavior of objects
- o Integer32 replaced with Unsigned32 where appropriate
- o Obsoleted OBJECT-TYPES (DisplayString, IPAddress) replaced with SnmpAdminString, [RFC 4001](#) and [RFC 5017](#) TCs. Added conformance statements mandating IPv4 support only.
- o Clarification of the conformance clauses added in the MODULE-COMPLIANCE description and the following GROUPs and OBJECTs descriptions.

- o Re-organization of some conformance groups. Each group now refers to precise options or features. 5 new features (specified through dvbRcsSystemSatLabsFeaturesDeclaration object) are therefore defined: ODULIST, EXTNETWORK, EXTCONTROL, EXTCONFIG, EXTSTATUS.
- o Clarification in the RowStatus OBJECTs description whether writable objects in the dynamically created rows can change value while the RowStatus object is active.
- o Security section expanded.

Rev -07

\* Eighth draft

Updated following MIB doctor review.

- o Objects dvbRcsNetworkAirInterfaceDefaultGatewayInetAddressPrefixLength, dvbRcsPrimaryDnsServerInetAddressPrefixLength, dvbRcsSecondaryDnsServerInetAddressPrefixLength, dvbRcsNetworkNccMgtInetAddressPrefixLength were missing.
- o Size limit added to Uri objects
- o It is now described in InetAddressObjects that they are to be interpreted as defined by the corresponding InetAddressObjectType.
- o Dscp and DscpOrAny TC from Diffserv MIB are now used.
- o dvbRcsPktClassSrcInetAddressType and dvbRcsPktClassDstInetAddressType corrected to read-create
- o Syntax for dvbRcsSystemOduAntennaSize corrected to Unsigned32
- o Details of interpretation of dvbRcsSystemSatLabsXxDeclaration objects now reside in the associated TC descriptions.
- o Addition of [RFC3289](#), [RFC3411](#), [RFC4001](#), [RFC5017](#) as normative references.

Rev -08

\* Ninth draft

Updated following MIB doctor review.



- o A clarification is added to the description of dvbRcsPhbIdentifier object, which is an INDEX object. It explains that value 0 designates the Default PHB. Therefore an INDEX of 0 can be used here. The Syntax of this object is also restricted to 16-bit, as explained in the description. The Syntax of dvbRcsPktClassPhbAssociation object also restricted accordingly.

<<<End of RFC Ed Note >>